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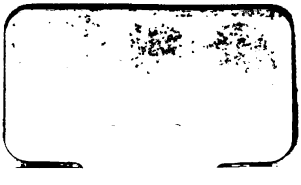

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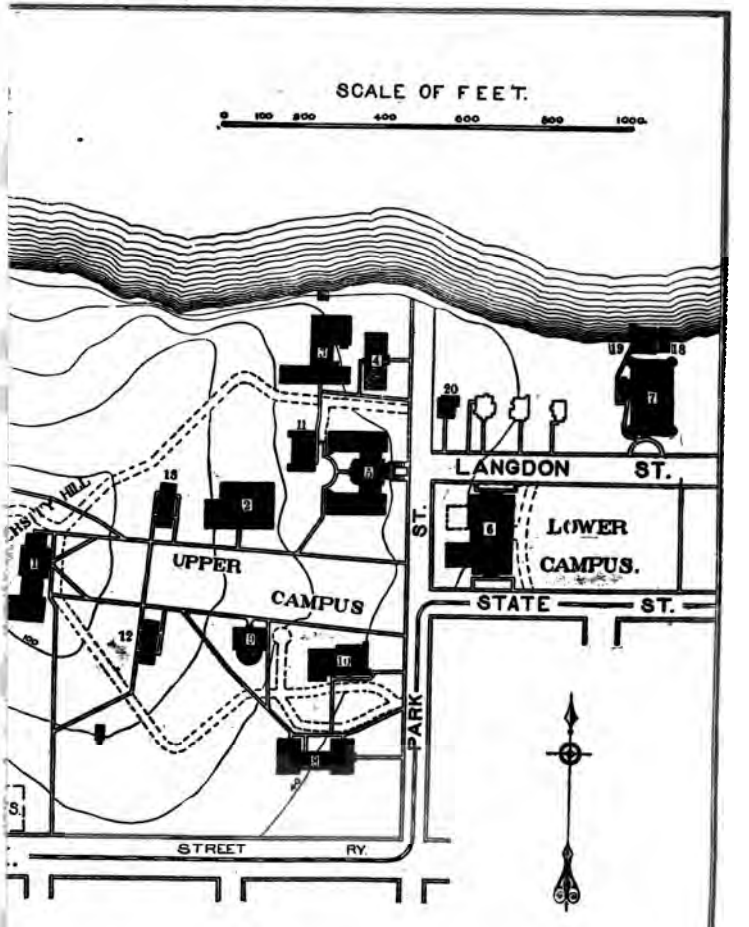

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CALENDAR.

1904.

Jan. 5,	Exercises resumed ater the Christmas recess.
Jan. 30-Feb. 5,	Final examinations, first semester.
Feb. 8,	Registration day, second semester.
Feb. 22,	Washington's Birthday: legal holiday.
Mar. 31-April 4,	Easter recess.
May 30,	Decoration Day: legal holiday.
May 28-June 3,	Final examinations, second semester.
June 2-3,	Examination for admission to the University.

JUBILEE WEEK.

June 5,	Baccalaureate Address.
June 6,	Class Day Exercises.
	Alumni Meeting.
	The President's Reception to Official Guests of the University.
	Alumni Banquet.
	Illumination and Torchlight Procession.
June 7,	Inauguration Ceremonies.
	Luncheon on Library Terrace.
	Orchestral Concert.
	President's Reception.
	Water Fete.
June 8,	Semi-Centennial Ceremonies.
	Faculty Dinner.
	Alumni Reunions.
June 9,	Commencement Exercises.
	Alumni Reception.

June 10,	Summer vacation begins.
June 27,	Summer Session begins.
Aug. 5,	Summer Session closes.

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ACADEMIC YEAR 1904-1905.

Sept. 26-28,	Registration days.
Sept. 26-28,	Examinations for admission to advanced standing in the College of Law.
Sept. 27-28,	Examinations for admission to the University.
Sept. 29,	Lectures and recitations begin.
Nov. 24,	Thanksgiving Day: legal holiday.
Dec. 24,	Christmas recess begins.

1905.

Jan. 3,	Exercises resumed after the Christmas recess.
Feb. 4-10,	Final examinations, first semester.
Feb. 13,	Registration day, second semester.
Feb. 22,	Washington's Birthday: legal holiday.
April 20-24,	Easter recess.
May 30,	Decoration Day: legal holiday.
June 10-16,	Final examinations, second semester.
June 15-16,	Examinations for admission to the University.
June 18-22,	Commencement Week.

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1903-1904.

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State at Large, SAMUEL SHAW, Crandon.
State at Large, DR. F. W. A. NOTZ, Watertown.
State at Large, MRS. HELEN R. OLIN, Madison.
1st District, REV. J. E. COLEMAN, Evansville.
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State at Large, ALMAH J. FRISBY, Milwaukee,	1906.
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8th District, JAMES C. KERWIN, Neenah,	1904.
9th District, EDMUND A. EDMONDS, Rhinelander,	1904.
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BULL, STORM, M. E., Professor of Steam Engineering. *E. B.* 212. 141 W. Gorham.

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JACKSON, DUGALD CALEB, C. E., Professor of Electrical Engineering. *E. B.* 217. 439 Murray.

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JONES, BURR W., A. M., LL. B., Professor of Law. *L. B.* 112 Langdon.

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KING, CHARLES ISAAC, Professor of Mechanical Practice. *M. S.* 628 State.

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*On leave of absence for the second semester, 1903-04.

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†Resigned April 1st, 1904.

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THE UNIVERSITY OF WISCONSIN.

INTRODUCTION.

HISTORICAL SKETCH.

The University of Wisconsin was founded in the days of the pioneers of the State. In the first year of the existence of the territory (1836), an act was passed for the establishment of "Wisconsin University" at Belmont; but, except for the naming of trustees, the project was never carried out. In 1837, another act to establish the "Wisconsin University of Green Bay" eventuated in the formation of a temporary local college called Hobart University. It was in 1838 that the University of the Territory of Wisconsin was provided for by law, and endowed by the act of Congress in the same year with the customary grant of two townships of land. Its governing body, a Board of Visitors, alone evidenced the existence of this University for ten years. Section 6 of the constitution of the new state, in 1848, declared that "Provision shall be made by law for the establishment of a state university, at or near the seat of the state government, and for connecting with the same from time to time such colleges in different parts of the state as the interests of education may require." The land grants of the United States for the support of the University were made a perpetual fund for its support, and it was provided that no sectarian instruction should be allowed in the institution. The University was incorporated by the act of July 26, 1848, and a board of regents, to be chosen by the legislature, was made its governing body. At the first meeting of this board, October 7, 1848, a preparatory department was established, to open in February, 1849, under the charge of John W. Sterling, a graduate of the University of New Jersey (Princeton). The site for the University, on "College Hill," was selected, and John H. Lathrop, a graduate, and afterwards tutor, of Yale College, was called from the presidency of the University of Missouri to become Chancellor. He was formally inaugurated January 16, 1850. North Hall, the first building, was constructed in the same year, and opened Sep-

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tember 17, 1851. The first class graduated on July 26, 1854, consisting of Levi Booth and Charles T. Wakeley. At this time the faculty consisted of Chancellor Lathrop, occupying the chair of ethics, civil polity, and political economy, Professor Sterling, who taught mathematics, natural philosophy, and astronomy; O. M. Conover, professor of ancient languages and literature, and S. H. Carpenter, tutor. The attendance was forty-one, exclusive of fifteen students in the preparatory course. Under Chancellor Lathrop, the group of buildings was increased by South Hall, completed in 1855, and University Hall, completed in 1859. Congress granted Wisconsin in 1854 a second two townships of land for the University, but this, as well as the first grant, was sacrificed at low rates to attract immigration. Thus the income from the University fund was very small. Moreover, the State required the regents to construct their buildings by loans drawn from the same land fund instead of providing them by state bounty. Until 1870, the University struggled along on the meager income furnished by the lands donated by the federal government. The State made its higher education subordinate to the demand of its citizens for cheap lands.

The University in these years was criticized because of its preparatory department, and because of the alleged narrowness of the curriculum; it was demanded that "a more distinct bias should be given to its instructions in the direction of the several arts and avocations as they exist among men." In 1858, as the outcome of these demands, the preparatory department was restricted in its scope, and the University was reorganized into a department of science, literature, and the arts, consisting of six schools: philosophy, philology, natural science, civil and mechanical engineering, agriculture, and polity.

Chancellor Lathrop was succeeded in 1859 by Henry Barnard, a graduate of Yale, prominent in the reorganization of the schools of Connecticut and Rhode Island, founder of the *American Journal of Education*, and (1867) first national Commissioner of Education. His policy centered in elevating the public school system of the state as a basis for university growth, but ill health caused his resignation in 1860.

Under the *ad interim* direction of Professor Sterling, the University remained without a chancellor until 1867. The Civil War took a large proportion of the students into the field, and no commencement was held in 1864, all but one of the senior class having joined the army.

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The close of the war brought a new inspiration and growth to the University. The returning soldiers took up their studies, and by 1870 the University had nearly 500 students. A reorganization was effected in 1866, and Dr. Paul A. Chadbourne, a graduate of Williams College, was called to the presidency. Among the important developments of this period was the founding of the College of Law, the maturing of plans providing for co-education, and the institution of the agricultural department as an integral part of the University. This constituted a radical departure from the policy of the other states of the middle west. In many instances agricultural and engineering colleges have been founded apart from the state university. The rapid growth of the University of Wisconsin and its hold upon the people have been in a considerable measure due to the fact that it contains within its organiaztion the colleges which appeal to the farmer and artisan, as well as to the business and professional classes of the state.

It was through the efforts of President Chadbourne that an appropriation of $50,000 was secured from the legislature of 1870 for the erection of a separate building for the women students of the University. This building, now known as Chadbourne Hall, was constructed during the following year, when Professor Sterling as Vice-President administered the University, and was occupied in the fall of 1871.

President Twombly came to the University at the beginning of the academic year 1871-72. He was a graduate of Wesleyan University at Middletown, Connecticut, one of the overseers of Harvard College, and a founder of Boston University.

The reorganization of 1866 had provided for co-education, but during these years the work of the women was kept separate from that of the men. It was significant, however, of an increasing recognition of the importance of the education of women, that the first appropriation which the legislature ever made to the University was for the women's building, and only a few years elapsed when complete co-education was adopted. Perhaps the most important development of the period of Dr. Twombly's presidency was the provision made by the legislature for a state tax of $10,000 a year to form a part of the University income. In thus adopting the policy of a special annual tax for the support of the University, the legislature made the formal explanation in the preamble to the law, that the policy of disposing of

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the land grants by congress at a low price, in order to attract actual settlers, had prevented the increase of the productive funds, and that it was the duty of the State to see to it that the University should not suffer. A system of free tuition to the graduates of the high schools of the State who passed the University entrance requirements, was also adopted at this time. This step was the beginning of the elimination of the preparatory department of the University. By resting its growth upon the high schools of the State, and receiving an annual income from the taxpayers, the University merged itself completely with the educational life of the State, and, in the long run, felt the benefits of this change.

With the coming of President Bascom from Williams College, in 1874, the University entered upon a new life. The finances of the institution were put on a better basis by the grant of the legislature of a tenth of a mill tax, which afforded increasing revenue as the wealth of the State increased. Large specific grants for new buildings, including Assembly Hall, Science Hall, the Chemical Building, and the Machine Shop, were made in the same period. The farmers' institutes and the short course in agriculture brought the University into closer touch with the farmers of the State. Under Dr. Bascom's presidency the preparatory department was abolished, and the University found all the students it could care for among the graduates of the high schools. At the beginning of his presidency the attendance, excluding the preparatory department, was about 300. At its close, thirteen years later, it was but 500; but the University had thoroughly gained the respect of the State.

President Bascom was succeeded by President Chamberlin of the United States Geological Survey, a graduate of Beloit College. He gave the University a strong impulse toward graduate study by the emphasis which he laid on research. Courses of study were increased, the standards of admission raised, and fellowships provided for graduate study. When he resigned, after five years of service, in 1892, the University had doubled its numbers, rising from five hundred to one thousand. During his presidency, a new science building had been finished, and buildings erected for the dairy school and the College of Law. In addition, a University boat house had been built, and the contracts had been let for the Armory and Gymnasium that are now such a prominent feature of the Lower Campus.

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President Adams came to Wisconsin from Cornell, whose presidency he had just resigned. Under his administration the University rose from one thousand students in 1892 to two thousand six hundred in 1901. The beautiful building for the library of the State Historical Society and the University, costing nearly three quarters of a million of dollars, and housing treasures of inestimable value, is the most impressive monument of his presidency. The University developed into a larger life in all directions during these ten years. Particularly the great increase in the number of graduate students and the emphasis upon graduate teaching should be noted. At the close of his presidency there were over one hundred graduate students, while ten years before there were only twenty-two. Athletics had reached their largest development in the same period, and Camp Randall, an athletic field of forty-two acres, was purchased for the University. The University began its summer sessions in 1899, a development which has been very important in increasing the influence of the University.

During the absence of Dr. Adams, caused by illness, and after his resignation, Professor Birge, Dean of the College of Letters and Science, served as Acting President during the three academic years, 1900-03.

Professor Charles R. Van Hise, the first alumnus of the University to hold the presidency, was elected in the spring of 1903, and assumed the active duties of the position at the beginning of the current academic year.

THE SUPPORT OF THE UNIVERSITY.

The University is supported partly by the income of federal grants, partly by taxation of the people of the State, and partly by private gifts. For such support there have been five federal grants, namely: the Two-Township Grant of 1848; the Supplementary Two-Township Grant of 1854; the Morrill Grant of 1862 for the support of studies pertaining to agricultural and mechanic arts; the Hatch Grant of 1887 for the support of agricultural experiment stations, and the Supplementary Morrill Grant of 1890.

Besides numerous and large appropriations for buildings and other specific purposes, the State of Wisconsin has made eight continuing grants, namely: the one-tenth mill tax of 1876, increased to one-eighth mill in 1883; the additional one-tenth mill tax of 1891; the appropriation for the support of the Observatory

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in 1887; the appropriation for the support of Farmers' Institutes in 1885, increased in 1887; the appropriation for the College of Engineering, in 1889, of one per cent. of the railroad license tax; and the additional one-fifth mill grant of 1897. The legislature of 1899 consolidated the various mill taxes, specified above, and the grant of one per cent. of the railroad licenses, into a specific continuous annual grant of an amount equal to the annual revenue from these various grants. This appropriation was increased by the legislature of 1901, and again by the legislature of 1903.

Of the gifts that have come to the University, that of Dane County for the purchase of lands for the University farm, that of the late Governor C. C. Washburn for the founding of the Washburn Observatory, and that of the late Judge Mortimer M. Jackson for the establishment of the Mortimer M. Jackson Professorship of Law, have been the most considerable and important.

THE UNIVERSITY AND THE STATE.

The University of Wisconsin is the culmination of the free educational system of the State. In the educational policy of the State, the University sustains a similar relation to the high schools that the high schools sustain to the primary and grammar schools. As those who have passed through the grammar grades may freely avail themselves of the high schools, so those who have completed with credit a full high school course may advance to the opportunities offered by the University. It is not expected that all pupils who complete the grammar grades will advance to the high school; nor is it expected that all who complete a high school course shall go forward to the University. But the school system of the State has been so arranged as to make the passage from one grade to another as easy and natural as possible, in order to afford every encouragement to thorough education. The State through the University undertakes to furnish instruction in the various branches requisite for a liberal education, in the technical branches of engineering, law, agriculture, pharmacy, commerce, home economics, and music. It also aims to encourage research work in all departments, to produce creative scholars, and thus do its part in the enlargement of the domain of knowledge. Thus it is the general policy of the institution to foster the higher educational interests of the State, broadly and generously interpreted. By prescribing a large number of studies during the first two years of undergraduate work, and by leaving all,

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or a large part of the work of the last two years to the free selection of the student, under a definite system, the University endeavors to give a wise measure of direction, leaving at the same time sufficient room for choice to encourage individual adaptation and special development. The graduate work is, of course, wholly elective.

GOVERNMENT.

The government of the institution rests upon the inherent obligations of students to the University and to the State. The University is maintained at the public expense for the public good. Those who participate in its benefits are expected, as a matter of honor, not only to fulfill the obligations of loyal members of the institution, of the community, and of the commonwealth, but actively to aid in promoting intellectual and moral interests. Every student owes to the public a full equivalent for its expenditure in his behalf, in the form of superior usefulness to it, both while in the institution and afterwards. Students therefore are under peculiar obligations loyally to do their best and prepare for service to the state and nation.

Under the regulations of the University a student convicted in court of a crime or misdemeanor is suspended, until further action is taken by the University.

The University avoids all that is sectarian or partisan; but it endeavors to extend its sympathy and influence to whatever contributes to good citizenship and high character.

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ORGANIZATION.

The University embraces—

- The College of Letters and Science.
- The College of Mechanics and Engineering.
- The College of Law.
- The College of Agriculture.
- The Graduate School.

The College of Letters and Science embraces—

- General Courses in Liberal Arts.
- Special Courses, which include:
  - Commerce.
  - Pre-medical Studies.
  - Pharmacy.
  - Education.
  - Music.
  - Home Economics.

The College of Mechanics and Engineering embraces—

- The Civil Engineering Course.
- The Sanitary Engineering Course.
- The Mechanical Engineering Course.
- The Electrical Engineering Course.
- The Applied Electrochemistry Course.
- The General Engineering Course.
- The Mining Engineering Group of Electives.

The College of Agriculture embraces—

- The Experiment Station.
- The Long Agricultural Course.
- The Short Agricultural Course.
- The Dairy Course.
- The Farmers' Institutes.

The College of Law embraces—

- A Three Years' Course.

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EQUIPMENT.

GROUNDS AND BUILDINGS.

The University of Wisconsin is picturesquely situated at Madison, the capital of the State of Wisconsin. The University grounds comprise 450 acres, and extend for more than a mile along the south shore of Lake Mendota, a sheet of water about four miles in width and six miles in length. In the eastern part of the grounds the land rises abruptly from the lake into two summits, of which the eastern and higher (University Hill) reaches a height of about one hundred feet above the lake. The larger number of the college buildings are placed on the summit and eastern slope of this hill. The western part of the grounds is lower and more nearly level, and is occupied by the Experimental Farm, belonging to the College of Agriculture. East of the University Hill is the Lower Campus, on the west end of which stands the State Historical Society Library Building for the libraries of the State Historical Society and the University. (For an account of this building, see Libraries, page 35). The rest of the Lower Campus is used for athletic sports and as the drill ground for the military department. At the session of 1893 the legislature provided for the purchase of Camp Randall for an athletic field. This is a tract of ground including forty-two acres, adjoining the University grounds to the southwest. In 1898 one hundred and sixty acres were purchased for a special experimental farm for the College of Agriculture, to which, in 1903, sixty acres were added.

The buildings of the University that are used for instructional purposes are fifteen in number. The oldest three—North Hall, South Hall, and University Hall—stand on and near the eastern summit of University Hill. North Hall was erected in 1850-51, and was opened for instructional purposes on September 17, 1851. It is now occupied by the departments of German and Pharmacy. South Hall was erected in 1855. It contains the office of the Dean of the College of Letters and Science; offices, lecture rooms, and laboratories for the departments of Bacteriology, Home Economics, Hebrew and Hellenistic Greek, and for the Course in Commerce; the Hygienic laboratory; and the offices of the Wisconsin

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Geological and Natural History Survey. University Hall, the construction of which was authorized by the legislature in 1857, was completed in 1859; it has since been materially changed; a new portico, a new dome, and a large south wing were added in 1897-99. This building contains the lecture and recitation rooms for most of the departments of language and literature, mathematics, history, and philosophy. On the first floor of the new wing are the offices of the President and the Registrar. These buildings as originally erected were paid for out of the money derived from the sale of lands granted by the national government.

Across the east front of the Campus, at the foot of University Hill, is a row of buildings, erected at the expense of the State of Wisconsin. At the south is Chadbourne Hall, the dormitory for young women; it was built in 1870 and remodeled and enlarged in 1896 (see p. 75). Next stands Assembly Hall, completed in 1879; the rear part, occupied by the University Library until the summer of 1900, has been remodeled for the School of Music. Still farther north is Science Hall, the largest and most costly of the University buildings, completed in 1887, containing the lecture rooms, laboratories, and museums of the departments of Physics, Geology, and Biology (including Anatomy), and also the laboratory of Psychology. Next to Lake Mendota is the Chemical Laboratory, built in 1885; to the rear of this is the Machine Shop, erected in the same year, and much enlarged in 1894. Near this building is the central heating plant, built in 1885, and enlarged in 1894. To the west of Science Hall, on the north side of the Campus, is the Engineering Building, erected in 1900. Opposite this, on the south side of the Campus, is the Law Building, erected in 1893, which, in addition to the library, lecture rooms, and offices of the College of Law, contains the offices of the Regents.

Directly west of University Hill is Observatory Hill, upon which stands the Washburn Observatory, erected in 1878 through the munificence of the late Gov. C. C. Washburn. Near it are the Students' Observatory and the residence of the Director. On the western slope of Observatory Hill are the Hiram Smith Hall (for the Dairy School), constructed in 1891, the Horticultural-Physics Building, begun in 1893 and completed in 1896, and the new Central Agricultural College building, first occupied in 1904, a description of which may be found in that part of this catalogue devoted to the College of Agriculture. Further west lie the barns and buildings of the Experimental Farm and the residence for the Dean of the College of Agriculture.

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Between the Lower Campus and the lake stands the Armory and Gymnasium, authorized by the legislature of 1891, and between this and the lake is the University Boat House.

LIBRARIES.

The libraries at Madison, all of which are at the service of members of the University, are five in number, viz., the Library of the University of Wisconsin, the Library of the State Historical Society of Wisconsin, the Library of the Wisconsin Academy of Sciences, Arts, and Letters, the State Law Library, and the Madison Free Public Library. These libraries duplicate books only to supply exceptional demands, and have an effective strength approximately equal to the total number of volumes possessed by them. The total number of bound volumes in all the libraries is about 276,000, and the number of pamphlets exceeds 150,000.

The first three libraries above named are all housed in the new library building of the State Historical Society on the Lower Campus of the University. This building, erected by the State of Wisconsin at a cost of $620,000, was occupied in the fall of 1900, and affords exceptional facilities in the way of convenient and commodious quarters to University students. In the planning of the building, the special needs of the University were consulted.

In the south half of the first floor are located four department libraries of the Historical Society, viz., documents, newspaper files, patents, and maps and manuscripts. In the north end of this floor is a series of six fine seminary rooms, allotted to American history, European history, economics, political science, and mathematics. The greater part of the second or main floor is occupied by the general reading room and the periodical room, which are used in common by the two libraries. In these two reading rooms 275 readers may find ample accommodation at one time. In open cases in the reading room are shelved several thousand reference and "reserved" books. To these, as well as to the large collection of general and engineering periodicals in the adjoining periodical room, all readers have direct access. The main portion of both libraries is stored in the stack wing adjoining the delivery room on the west. Officers of the University have direct access to the shelves in all parts of the library, and students engaged in advanced work, upon recommendation of their instructors, are allowed access to those parts of the collection dealing with their special subjects.

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The administrative rooms of the Historical Society and of the University library are situated at the south and north ends of the second floor respectively. The north end of the third floor is occupied by six seminary rooms, for the departments of German, Latin, Greek, French, English, and philosophy and education. In these rooms, as in those on the first floor, University seminaries are conducted. Advanced students have the privilege of using these rooms. Within them are placed special collections of books. The south end of the third floor contains a small lecture hall, a room set apart for the Wisconsin Academy of Sciences, Arts, and Letters, and two small administrative rooms. The museum and gallery of the Historical Society occupy the fourth floor. At no university in the country is to be found a more convenient or better appointed library building. The library is open fourteen hours daily, during the academic year, except on Sundays and legal holidays. At the opening of the college year introductory lectures on the use of the library are given to new students by the University librarian.

The library of the University of Wisconsin, including its branches, contains about 86,000 volumes and 30,000 unbound pamphlets. The catalogue is the usual dictionary card catalogue of authors, subjects, and titles in one alphabetical arrangement. Subject to certain restrictions, books may be drawn by all members of the University. Students are required to make a guarantee deposit of $2.00 with the Secretary of the Regents preliminary to borrowing books from the library. This amount is refunded on presenting to the Secretary the library deposit card properly endorsed by the Librarian.

In general, the library aims to be uniformly developed in all fields, but appropriations and gifts in recent years have rendered it specially strong in the lines of history, economics, political science, and in Germanic and classical philology. Through the kindness of Professor E. T. Owen, the library contains on deposit the Owen library of works on French language and literature, numbering 900 volumes. In 1899, liberal German-American citizens of Milwaukee contributed the sum of $3,150 for the purchase of a Germanic philology seminary library. This fund has been expended to supplement and develop the German department of the library, thus furnishing unexcelled facilities for the study of the German language and literature. The additions to the library from this source number two thousand volumes. During the academic year 1900-1901, the library received two notable

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gifts, one of $2,000 from three Milwaukee citizens for the purchase of books for the School of Commerce, and the other of $2,645, contributed by friends of the University in New York City, Milwaukee, and elsewhere, to the School of Economics and Political Science for the development of the library in those fields. These gifts have increased greatly the library facilities of the departments mentioned. In December, 1901, the late President Charles Kendall Adams presented to the University his fine private library of 2,000 volumes, especially rich in material on European history. A gift of $500 from Mr. Frederick Vogel of Milwaukee, in 1902, has been expended for a collection of 600 volumes in the field of political science and modern French legislative history. A fund of $250 was given in 1903 by the Milwaukee Gas Light Company, the annual income of which is to be used for the purchase of the *Zeitschrift für Farben- und Textil-Chemie*, and works on related subjects.

The College of Law has a special library of 5,000 volumes; and the Washburn Observatory is provided with the Woodman Astronomical Library, now containing 2,500 books and 2,500 pamphlets. The agricultural library of about 6,000 volumes is located on the first floor of the new Agricultural Hall. The pharmacy library in North Hall is specially strong in sets of pharmaceutical journals, most of which are placed on deposit by Professor Edward Kremers for the use of the University. In the reading room of the Engineering Building are kept the current files of about 125 of the most important engineering and technical periodicals, together with a collection of engineering reference books.

The Library of the State Historical Society contains over 128,000 volumes and 120,000 pamphlets. It is exceptionally rich in manuscript and other material for the study of the history of the Mississippi valley. The collections of the late Dr. Lyman C. Draper are included in the library. The Society's files of newspapers, periodicals, and the publications of historical societies are among the most complete in the United States. There is an unusually full collection of published colonial records and United States government documents, and the material for the study of American state and local history, western travel, the revolution, slavery, and the civil war, is abundant. In English history the library possesses the Calendars of State Papers, the Rolls Series, the publications of the Camden Society, the Records Commission, and the Historical Manuscripts Commission, the journals and debates of Parliament, and several important collections

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for the study of local history. The Tank collection (Dutch) offers special resources for the study of the Netherlands.

The Library of the Wisconsin Academy of Sciences, Arts, and Letters is a valuable collection of reports and transactions of learned societies, comprising about 5,000 volumes. It is placed in the new library building, and constitutes a useful supplement to the other libraries in this special field.

Members of the University also have free access to the State Law Library in the Capitol, which numbers about 38,000 volumes. By special arrangement students are allowed to draw books from the Madison Free Public Library, located in the City Hall. This is a well selected collection of over 19,000 volumes. The excellence and extent of these libraries is such as to make Madison among the first, and in some departments the first, of library centers west of the Alleghanies.

LABORATORIES.

CHEMICAL LABORATORIES.—The chemical laboratories, six in number, are in a building devoted exclusively to Chemistry. Four of these are general laboratories, viz.:

First, the qualitative laboratory, with accommodations for ninety-six students; *second*, the organic laboratory, accommodating thirty-two students; *third*, the quantitative laboratory, accommodating forty-eight students; and, *fourth*, the laboratory of physical chemistry, accommodating twenty-five students.

These laboratories, although large, well-lighted, conveniently arranged, and well supplied with the necessary apparatus and equipments, have been found inadequate for the needs of this rapidly growing department. In view of this fact the legislature in 1903 appropriated $100,000 for a new chemical building. When this is completed the old laboratory will probably be used for chemical engineering.

PHYSICAL LABORATORIES.—The instruction in the department of physics is designed to meet the needs of all classes of students, from those just entering, with no knowledge of the subject, to those who have been well trained, and who are prepared to continue in the more advanced courses or to take up a line of original investigation.

The physical laboratories are located on the first floor and in the basement of Science Hall, and are commodious and well lighted. Besides the lecture room and the large apparatus room, the first floor contains the general physical laboratory, which is new

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and complete in its appointments in every respect. The lecture room has a seating capacity for 150 students, and is provided with all the appliances to facilitate a complete course of experimental lectures. In the basement are three large general laboratories for undergraduate work, and a number of laboratories for special investigation, all of which are liberally supplied with piers to insure perfect stability of the instruments used. A well-equipped workshop under the direction of a skilled mechanic is an important feature of the department. Besides current supplied from the numerous dynamos in the University shops, the various rooms of the physical laboratory are connected with the electric light and power circuits of the city.

The physical apparatus includes, in addition to the equipment for demonstration purposes, an excellent collection of instruments adapted to measurement and investigation. The laboratory offers special facilities for carrying out graduate study and research.

MINERALOGICAL LABORATORY.—The laboratory of mineralogy is located on the second floor of Science Hall, where desks and chemical reagents for courses in blow-pipe analysis and determinative mineralogy are provided for a class of forty students; there is also a goniometer room which can be darkened for the study of crystals. In the mineralogical lecture room are the necessary models of crystals in glass and wood, and working collections of crystals and minerals.

PETROGRAPHICAL LABORATORY.—This laboratory is supplied with polarizing microscopes, other necessary apparatus, and a very complete set of rocks and of rock and mineral sections, for courses in optical mineralogy and petrology. The general and special collections mentioned under the caption of Museums are available for all advanced students of petrology.

GEOLOGICAL SEMINARY.—This room is fitted out as a department library with a full equipment of reference books, maps, charts, etc. The lecture room for geology is provided with a set of Zittel's *Palaeontologische Wandtafeln;* a large relief map of the United States by E. E. Howell; sets of Shaler's models and photographs and Davis' models showing the development of topographic features; numerous geological maps; projecting lanterns; a large collection of lantern slides, and other apparatus.

BIOLOGICAL LABORATORIES.—The elementary laboratory for the departments of botany and zoology is arranged to accommodate seventy-two students, and is provided with compound microscopes, dissecting microscopes, and other apparatus necessary to an ele-

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mentary course in botany and zoology. The departments have about ninety compound microscopes, chiefly by Leitz and by Bausch & Lomb, fitted for elementary and advanced work.

Botany.—The laboratories for advanced work in botany are fitted up with the apparatus and reagents necessary to advanced courses in vegetable histology, physiology, and cytology. A greenhouse and a laboratory, also under a glass roof, occupy the fourth floor of the south wing of Science Hall, and have been specially equipped for work on the development and physiology of the lower plants, and for plant pathology. A special laboratory is provided for work in general physiology, and is equipped with apparatus for advanced and research work on irritability, protoplasmic motions, reproduction, etc. All necessary reagents, ovens, paraffin baths, and microtomes are provided for histological and cytological work. A considerable amount of apparatus for work on the special physiology of the flowering plants is also provided.

Zoology.—For advanced work in vertebrate zoology there are laboratories devoted to vertebrate anatomy, histology, and embryology. The laboratory for vertebrate anatomy has been moved to the fourth floor of Science Hall, and has been enlarged; it is well equipped with material for dissection, models, charts, and skeletons. The histological laboratory is provided with a full equipment of microscopes, microtomes, and the various stains and reagents necessary for the work. For illustrating the lectures in histology there are a large number of models, wall charts, and a very complete set of lantern slides to which additions are being constantly made. For the work in embryology a similar equipment is provided.

For courses in invertebrate zoology and entomology a laboratory has been equipped for carrying on the regular courses or advanced work that the students may elect. In connection with the laboratory, and to be used by the students, are museum collections, especially the sets of models and life histories, and a number of smaller collections for the laboratory and the lecture room.

Human Anatomy.—The fourth floor of the north wing of Science Hall and the space adjoining the laboratory for vertebrate anatomy has, during the past year, been divided into a series of private laboratories, dissecting rooms, study rooms, store rooms, etc., to be used in connection with the study of human anatomy. Material for dissection is kept in a cold storage plant which is connected with this floor by an elevator. A large number of models by Steger of Leipzig, Tramond of Paris, Zeigler of Frei-

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burg, Auzoux of Paris, and other well-known firms are provided to assist the student in his work. Each student has the use, under proper restrictions, of these models and of skeletons, articulated and disarticulated skulls, ligament preparations, etc. Further information in regard to this course will be found in connection with the detailed account of the courses of study.

Bacteriology.—The laboratories for the College of Letters and Science are located on the fourth floor of South Hall; those for the College of Agriculture on the first and second floors of the Agricultural Building. The laboratories in South Hall consist of a suite of nine rooms, including a large general laboratory and an advanced laboratory with special rooms for individual research. The equipment consists of late patterns of American and German compound microscopes, sterilizers, incubators, and lantern slides.

THE AGRICULTURAL LABORATORIES are fully equipped with new material throughout, and the facilities offered for investigations in all problems relating to agriculture in its broadest sense are exceptionally complete.

THE STATE HYGIENIC LABORATORY is located on the third floor of South Hall, and the abundant material here furnished for diagnostic purposes is also utilized for class room and research work.

THE PSYCHOLOGICAL LABORATORY.—This laboratory is designed to illustrate by practical experiments and demonstrations the courses in psychology; to give an opportunity to students of experimental psychology to study the methods, equipments, and results of this science, and to provide for original research in many directions.

Original research has been carried on for several years and the more important results have been published in the *American Journal of Psychology*, the *Psychological Review*, and elsewhere.

In addition to four series of studies from the laboratory already published, the work done in the laboratory has been the basis of several articles that have appeared or are about to appear in various periodicals, as well as of theses submitted for degrees.

The engineering, assaying, pharmacy, and agricultural laboratories are described under their respective departments.

UNIVERSITY MUSEUMS.

OFFICERS.

CHARLES R. VAN HISE, Ph. D., LL. D., President of the University.
ROBERT A. HARPER, Ph. D., Professor of Botany, Curator for Botany.

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WILLIAM S. MARSHALL, Ph. D., Assistant Professor of Zoology, Curator for Zoology.

WILLIAM S. MILLER, M. D., Assistant Professor of Vertebrate Anatomy, Curator for Vertebrate Anatomy.

WILLIAM H. HOBBS, Ph. D., Professor of Mineralogy and Petrology, Curator for Mineralogy and Petrology.

N. M. FENNEMAN, Ph. D., Professor of General and Physiographic Geology.

C. K. LEITH, Ph. D., Professor of Economic and Structural Geology, Curator for Economic and Structural Geology.

ROLLIN H. DENNISTON, B. S., Curator for Pharmaceutical Collections.

The University museums comprise the Geological and Mineralogical Museum, the Biological Museum, the Herbarium, and the Drug Cabinet, which occupy respectively the second and third floors of the south wing of Science Hall. The collections in the College of Mechanics and Engineering and the College of Agriculture are described on later pages.

THE GEOLOGICAL AND MINERALOGICAL MUSEUM has been built up for the most part with special reference to instructional work. It is divided into four parts, one devoted to systematic paleontology, one to systematic collections of minerals and rocks, one to a systematic collection of ores, and another to relief models illustrating topographic and geologic features. The paleontologic section includes the Powers collection of Wisconsin Silurian fossils and also the Wisconsin Academy of Arts, Science, and Letters collection containing the type fossils described in the volumes of the first Wisconsin Geological Survey of Wisconsin. In the mineral and rock section is included the Henry collection from southwestern Wisconsin and several of the well-known illustrative collections of rocks.

A large amount of general illustrative material, not coming directly under the above heads, is exhibited in cases in the halls of the geological department.

A number of additional collections are at present stored in the lecture rooms, laboratories, and offices, and are accessible to students interested. These include a collection of over 40,000 specimens, with about 20,000 thin sections, belonging to the Pre-Cambrian and Metamorphic Division of the United States Geological Survey, one of the largest of its kind in the world; a large collection of New England rocks belonging to the same survey; the collections of the Wisconsin Geological Survey; and the Hobbs col-

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lection, mainly of European rocks, supplied with over 1,000 thin sections. Of technical interest are the special collections of metallurgical, pharmaceutical, and engineering specimens, and the collection of Wisconsin building stones and clays made by the Wisconsin Geological Survey.

THE ZOOLOGICAL AND BOTANICAL MUSEUM is in the third story of the south wing of Science Hall, directly above the geological museum. Among the specimens at present placed in the cases may be named a good collection of vertebrate skeletons; a complete set of Zeigler models illustrating various stages in the development of vertebrates and invertebrates; models of the brain and sense organs; a large number of Blaschka glass models of invertebrates; an alcoholic collection of invertebrates from the Naples Zoological Station; representative collections of echinoderms, corals, and mollusks. The botanical cases contain a collection of Auzoux models of flowers and a collection of specimens of wood. The Owen collection of Lepidoptera, comprising five thousand species, and over twenty thousand specimens, is deposited in Science Hall.

THE HERBARIUM of the University (Room 41, Science Hall) includes the Lapham collection, chiefly of flowering plants, purchased by the State from the estate of I. A. Lapham, of Milwaukee. This collection, which contained about 8,000 species, has been mounted and arranged and is now accessible for study. The Wisconsin plants have been separated from the rest, and it is the intention to make them the nucleus of a complete representation of the Wisconsin flora. Large additions have been made to this herbarium by Professors L. S. Cheney and H. L. Russell. Mr. Lapham's collections also included a considerable number of algæ, lichens, and mosses. The collection of mosses has been very greatly extended by gifts, purchases, exchanges, and collections acquired, so that it now includes almost all of the species known to North America, besides a large number of those from other countries. Many valuable types and sets of exsiccati are included. The collection of algæ and parasitic fungi contains the principal North American exsiccati as well as large local collections. There is also a large and rapidly growing collection of alcoholic and dried specimens of the fleshy fungi of the State.

The biological seminary room contains a department library with the main reference books and periodicals in zoology and botany, and card catalogues of biological literature.

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THE DRUG COLLECTION.—At present this collection contains about 4,500 sample specimens of drugs for purely illustrative purposes. Each year large additions come to it as contributions from various sources. Among the larger contributors are Schimmel & Co., of Leipzig, Germany, Lehn & Fink, Parke, Davis & Co., and Gilpin, Langdon & Co. The collection is well supplied with drugs of Asiatic origin. Notable among them are a collection of fifty Ceylon drugs and medicines and a collection of more than one hundred Malay medicines.

THE CHEMICAL COLLECTION.—The collection here described is located in North Hall. Through the liberality of the United Alkali Company of England, some fifty specimens of their products in various stages of manufacture were obtained. Dr. William Simon, of Baltimore, has contributed a series of specimens illustrating the manufacture of bichromate and ferrocyanide of potassium. Fries Bros., of New York, have donated a number of synthetics used in perfumery. A similar collection has recently been received from the Herbene Chemical Co. of New York. A cabinet for volatile oils contains fine collections from Schimmel & Co. of Leipzig, Germany, and Rome; Bertrand Fils of Grasse, France; Dodge and Olcott, New York; and others. A cabinet for dye-stuffs contains over 330 samples of artificial dye-stuffs from the Farbenfabriken of Elberfeld & Co. of New York. This collection is supplemented by ten volumes of richly illustrated descriptive matter, to which additions are being constantly received. Large and valuable collections of modern synthetic new remedies have been received from Schering and Glatz, the Farbenfabriken of the Elberfeld Company, and from Merck & Co., all of New York. Numerous smaller donations have been received within recent years.

When the museums are not open to the public, access may be gained by visitors at all reasonable hours by calling upon the janitor of the building.

THE WASHBURN OBSERVATORY.

The Washburn Observatory is excellently equipped for astronomical work. Its principal instruments are: An equatorially-mounted telescope of 15½ inches aperture, constructed by Alvan Clark & Sons; a meridian circle, by A. Repsold & Sons, of Hamburg, with the accessories of such instruments.

A full account of the Washburn Observatory will be found on a later page (see Index).

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GENERAL INFORMATION.

UNIVERSITY REGULATIONS.

THE COLLEGE YEAR.

The college year is divided into two semesters. The first semester opens on the last Wednesday in September. Registration and examinations for admission will be held on the preceding Tuesday, and on the opening day of the semester. The second semester ordinarily begins on the second Monday in February. Commencement Day falls on the Thursday preceding the last Wednesday in June.

There are two recesses or vacations during the college year, one at Christmas and one at Easter. The Christmas recess begins at the end of the second day before Christmas, and closes at the beginning of the second day after New Year's Day, when this falls on Sunday, Monday or Tuesday. When New Year's Day comes later in the week than Tuesday, the recess closes at the beginning of the following Tuesday. The Easter recess begins on the Thursday morning before Easter Sunday, and closes on the morning of the following Tuesday.

STUDENT ADVISERS.

In the College of Letters and Science, the College of Engineering, and the College of Agriculture, each student is placed under the immediate charge of a member of the Faculty, who acts as his adviser in matters pertaining to University work. The student must consult his adviser in choosing studies, and obtain his approval before classes can be entered.

The system of student advisers is somewhat different in the colleges mentioned above, and does not obtain in the College of Law and the School of Music.

CONVOCATIONS.

A weekly assembly or convocation of the students is held on Friday of each week at noon. At this meeting the President makes general announcements to the students, and speaks upon subjects of general interest. Persons of note, either within or

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without the University, frequently make addresses on matters of University interest, questions of contemporary history and politics, or recent advances in pure and applied science. Music is made an important feature of the programme.

HONORS.

Honors are given at graduation for special work of high order of excellence done in any department. Such honors will be voted by the Faculty to those students whose graduation theses show exceptional excellence and who have completed with unusual success a long course of study in the department in which the thesis is presented. The thesis must show work additional to all requirements for graduation equal to two hours per week for one year. Students desiring to become candidates for special honors in any department must make application to the Faculty at the opening of the second semester through the professor in whose department the honors are sought.

UNDERGRADUATE SCHOLARSHIPS AND FUNDS.

SCHOLARSHIPS FOR UNDERGRADUATES.

The Amelia H. Doyon Scholarships.

By the will of Mrs. Amelia H. Doyon, late of Madison, the University has received a gift of five thousand dollars, to be known as the Amelia H. Doyon fund. The income from this fund is to be divided into two equal parts, to be designated as the Amelia H. Doyon Scholarships, which are to be given to young women in attendance at the University, to be selected by the Faculty. In making this selection the Faculty is to take into consideration the scholarship or standing of the persons selected and their need of financial help. Neither of these scholarships is to be bestowed on any young woman who has not been in attendance as a student at the University of Wisconsin for at least one year.

Hebrew and Hellenistic Greek Scholarships.

The Biblical Alliance of Wisconsin offers a sum of money, at present amounting to fifteen hundred dollars, to provide scholarships for the encouragement of study in the department of Hebrew and Hellenistic Greek. These may be held by graduates or under-

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graduates. Award is made on basis of excellence. Information regarding the scholarships will be given on application to Professor W. H. Williams.

For the graduate scholarships, see the Graduate School.

The Lillian Paige Allis Scholarships.

Through the liberality of Mrs. Lillian Paige Allis, of Madison, the department of German offers two scholarships, one open to juniors and the other to seniors, having a value of fifty dollars and one hundred dollars respectively.

The Christian R. Stein Scholarship.

By the will of the late Christian R. Stein, of Madison, a bequest of $1,000 was made to the University, the interest of which maintains a scholarship to be given by the Faculty to a student of the University who has been in attendance at least one year.

The Frederick C. Thwaits Scholarship.

Mr. Frederick C. Thwaits of Milwaukee has generously made provision for an annual scholarship of $250, to be awarded to a young man in the graduating class of one of the Milwaukee high schools, on the basis of scholarship and need of financial assistance. In 1904 this scholarship will be assigned to the East Division High School.

LOAN FUNDS AND STUDENT AIDS.

The John A. Johnson Fund.

The University is indebted to the liberality of the Hon. John A. Johnson, late of Madison, for a fund of $5,000, the interest of which is loaned to students. The sum obtained by one student in one year shall not exceed $50, and the total amount shall not exceed $200. At present the benefits of the fund are limited to Scandinavian students. The income of this fund is loaned by a subcommittee of the Faculty Committee on Loan Funds, consisting of Professors Olson and Bull.

The Graduating Class Fund.

The class of 1900 gave to the University several hundred dollars as the nucleus of a loan fund for the aid of needy students. The classes of 1901 and 1902 have made substantial additions to the fund, and it is hoped that succeeding classes will also add to

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it. This fund is under the charge of the Faculty Committee on Loan Funds, consisting of the President of the University, Professor Storm Bull, Chairman, and Professors Olson, Gay, and Mayhew.

The Secretary's Fund.

The Secretary of the Regents in 1900 established a fund of $500 for the aid of meritorious students. Additions to the fund have been made by others. No loan shall exceed $50 in a single year, and the aggregate loans to any person shall not exceed $200. This fund is managed by the Secretary.

The Geneva Loan Fund.

This fund of $450 was provided in December, 1903, by Mrs. E. P. Allis and Mr. Louis Allis, of Milwaukee, and by Mr. Frank W. Allis (member of the Short Course class of 1897), proprietor of Monona Farm, Madison. It is available to needy members of the Short Course classes of the College of Agriculture only, in small amounts. Loans from this fund may be made through the Dean of the College of Agriculture.

Employment Bureau.

The Young Men's Christian Association of the University conducts an employment bureau for the benefit of those students who find it necessary to contribute to their own support. The positions that are most frequently supplied are: waiting on table, tending furnace, assisting in the house, caring for lawns, and serving as stenographer, typewriter, or clerk. In 1902-03, three hundred and fifty positions, of an estimated value of $6,000, were secured for one hundred young men. In the first semester of 1903-04, three hundred positions were filled.

SOCIETIES AND PUBLICATIONS.

LITERARY AND SCIENTIFIC SOCIETIES.

The literary or debating societies of the University have played so important a part that they may almost be said to constitute a department by themselves. The Athenæan and the Hesperian societies are nearly as old as the University itself, Athena having been organized in 1850, and Hesperia in 1854. Philomathia

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was organized in 1886, and Olympia in 1902. These societies are sustained with great enthusiasm, and are an important means of intellectual training. Athena, Hesperia, and Philomathia form what is known as the Joint Debate League, which arranges annually a public debate between two of these three societies. This joint debate has been a feature of the University for nearly forty years. These four above-mentioned are men's societies in the College of Letters and Science. The two chief debating societies of the College of Law are the Forum and the Columbia. These six societies form the inter-collegiate debating league, from the members of which inter-collegiate debaters are chosen.

The young women maintain two literary societies, Castalia, established in the early years of the University, and Pythia, in 1902.

The Luther S. Dixon, Andrew A. Bruce, John Marshall, and Edwin E. Bryant law clubs afford valuable practice in the trial of cases. The Short Course Literary Society and the Dairy Course Literary Society in the College of Agriculture offer opportunities for the discussion of questions of special interest to this department. The N. O. Whitney Engineers' Association, the University of Wisconsin Engineers' Club, the J. B. Johnson Engineering Association, and the Civil Engineering Society in the College of Engineering, discuss professional and semi-professional subjects.

The most important scientific organization in the University is the Science Club, which includes both officers of instruction and advanced students, and seeks to promote an interest in scientific study and research. It conducts public meetings for the untechnical discussion of scientific topics of current interest. A bronze medal, executed by T. Moring, London, is annually awarded by the Club for the best baccalaureate thesis on a scientific subject. The Historical and Political Science Association and the Language and Literature Club are new societies organized by instructors and graduate students for the purpose of fostering advanced work. In various departments of the University there are journal clubs or societies for furthering the special work of the departments. Among these are the *Germanistische Gesellschaft;* a Scandinavian society, the *Nora Samlag;* the Pharmaceutical Society; the Classical Club; the Physics Journal Club; the Biological Club, and the Chemical Club. In other departments, where no such organization has been effected, similar results are reached by means of the various seminaries. The graduate students of the University maintain a Graduate Club. The Haresfoot Club is maintained by

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University Dramatic talent, and presents a play annually; the Red Domino Club is a similar organization maintained by young women; and the Edwin Booth Club aims to promote dramatic interest and train dramatic talent.

SOCIAL AND RELIGIOUS ORGANIZATIONS.

The women have organized a Woman's Self Government Association, which seeks to further in every way the unity of spirit of women in the University, to increase their sense of responsibility toward each other, and to be a medium by which the social standard of the University can be made and kept high. The religious organizations of the University include the Young Men's Christian Association, and the Young Women's Christian Association. Honorary fraternities are represented by Phi Beta Kappa, established in 1898, and Tau Beta Pi, the honorary engineering fraternity, established in 1899.

PUBLICATIONS OF THE UNIVERSITY.

The University issues five series of publications, giving the results of research in the University, under the general title, *Bulletin of the University of Wisconsin.* These series are (1) Economics and Political Science, (2) History, (3) Philology and Literature, (4) Science, (5) Engineering.

The Washburn Observatory issues the *Publications of the Washburn Observatory,* edited by Professor George C. Comstock.

From the College of Agriculture are issued the *Bulletins of the Experiment Station,* the *Annual Reports,* and the *Bulletin of the Farmers' Institutes.*

A further statement in reference to the above publications is found in the Appendix. Application should be made to E. F. Riley, Secretary of the Regents, for the *Bulletin,* to Professor G. C. Comstock for the publications of the Washburn Observatory, and to Dean W. A. Henry for the publications of the College of Agriculture.

Besides these official publications of investigations the following are edited at the University:

Bulletins of the Wisconsin Geological and Natural History Survey, edited by Professor E. A. Birge, Director.

Transactions of the Wisconsin Academy of Sciences, Arts and Letters, edited by Professor E. B. Skinner, Secretary.

The Pharmaceutical Review, edited by Professor Edward Kremers.

The Municipality, edited by Dr. Samuel E. Sparling.

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The University also issues a general series of the *Bulletin*, which includes the annual Catalogue, special announcements of the Graduate School, the Summer Session, the College of Engineering, the College of Agriculture, the College of Law, the School of Music, the Course in Commerce, the Course in Pharmacy, and of various departments in the College of Letters and Science. These publications are issued during the second semester, and may be had upon application to the Registrar of the University.

The *Directory of Officers and Students* is issued by the University in the early part of the academic year. It gives the University and city address of the officers of instruction and government, and the home and city address and the class of each student.

The *General Catalogue of the Officers and Graduates of the University of Wisconsin* gives a complete list and classification of the graduates of the University and their present address and occupation, and the terms of service of the regents and members of the instructional force. This catalogue gives also a list of the recipients of honorary degrees, and of higher degrees conferred for work done. It is published once in five years, under the editorship of Professor D. B. Frankenburger, and may be had, for 10 cents to cover postage, upon application to the Secretary of the Regents. The last edition was published in 1902.

STUDENT AND ALUMNI PUBLICATIONS.

The publications conducted by the students include *The Daily Cardinal;* a bi-weekly illustrated humorous publication, *The Sphinx;* a monthly, *The Wisconsin Literary Magazine;* and an annual, *The Badger*, issued by the Junior Class. The students of the College of Engineering issue a quarterly publication, *The Wisconsin Engineer.* A monthly journal, *The Wisconsin Alumni Magazine,* is issued by the alumni.

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ADMISSION TO THE UNIVERSITY.

METHODS OF ADMISSION.

Students are admitted either upon examination at the University, or upon certificates from accredited schools, except that students and graduates of the Normal schools of this state, students from other colleges and universities, and adult special students, are admitted in accordance with the provisions stated on pp. 64-65.

For the examinations at the University, see p. 62.

TIME OF ENTRANCE.

New students ordinarily enter the University at the opening of the first semester; but there are advantages in beginning work in the Summer Session, not only to the student who needs to strengthen his preparation, but also to the strong student, who through the advantages offered by the Summer Session may complete his University course *in three years.* (See p. 288.)

In a general way it is, moreover, advantageous to any student to begin work in the Summer Session, for the following reasons: He becomes familiar with University methods of instruction before the heavier work of the year begins; he receives more personal attention, as the classes in summer are smaller; and his experience and the advice of his instructor will enable him more wisely to shape his course.

New students may enter at the beginning of the second semester, but they should be on hand the week preceding, in order to make the necessary arrangements, as the regular work of the semester begins promptly on Tuesday morning.

ENTRANCE REQUIREMENTS.

The requirements for admission are stated in terms of units. The term *unit* means the equivalent of five recitations a week for one year in one branch of study. In closely allied branches not usually taught in periods of one year each, such as physiology and zoology, units may be constructed by adding the respective time-

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values of such studies. In any subject three recitations a week for one year and a half may be counted as one unit.

Fourteen units are required for admission. Until the academic year 1905-06 equivalents will be accepted for the two units of language required. Students applying for admission in 1905-06 and thereafter who offer fourteen units which do not include two units of foreign language, will be admitted on condition that the language requirements be met before graduation. This will ordinarily require extra work to the extent of four hours a week for one year. This privilege will be extended only to graduates of schools in the State of Wisconsin, and opportunity for making up the deficiency in language will be offered by the University.

No language course of less than two units will be accepted. Not more than four of the required fourteen units will be accepted in any one subject.

The entrance requirements are presented under two general heads: I, studies required of all; II, optional groups.

I. The following units are required of all:

Mathematics,	2 units
English,	2 units
History,	1 unit
Science,	1 unit
	6 units

II. In addition to the requirements under I, eight units from one of the four following groups must also be offered:

Group A.

Latin, 4 units
Any 4 units from the following:
Greek, 2 units
German, 2 units
French, 2 units
Elective, 2 units
(from groups B, C, and D.)

Group B.

Latin, 4 units
Any 4 units from the following:
English, 1 or 2 units
History, 1, 2, or 3 units
Civics, Economics, 1 unit
Mathematics, 1 unit
Science, 1, 2, or 3 units
Foreign Language, 2 units

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Group C.	
German or French, 4 units	
Any 4 units from the following:	
English,	1 or 2 units
History,	1, 2, or 3 units
Civics and Economics,	1 unit
Mathematics,	1 unit
Science,	1, 2, or 3 units
Foreign Language,	2 units

Group D.	
German or French, 2 units	
Any 6 units from the following:	
English,	1 or 2 units
History,	1, 2, or 3 units
Civics, Economics,	1 unit
Mathematics,	1 unit
Science,	1, 2, or 3 units
Latin,	2 or 3 units
French or German,	1, 2, or 3 units

REQUIREMENTS FOR ADMISSION TO THE SEVERAL COLLEGES AND COURSES OF THE UNIVERSITY.

College of Letters and Science. The studies under I, and any one of the groups A, B, C, or D, under II.

College of Engineering. The studies required of all, under I, and any one of the groups A, B, C, or D, under II, except that physics, 1 unit, must be included in the studies offered. One unit of approved manual training (including drawing) will be accepted as one of the four or six elective units to be offered. Groups B and C are recommended as giving the most satisfactory preparation, and students are advised to include chemistry and advanced mathematics in the subjects offered. Students who do not present at least two units of foreign language for admission will find it difficult to complete any of the courses in engineering in four years.

In the fall of 1905 and thereafter, all students entering the College of Engineering will be required to pass an examination in algebra. It is essential that students in the engineering courses shall possess a good working knowledge of algebra *at the time when they begin their course,* and it is the purpose of the examination to secure this by requiring a review of the subject shortly before entering the University. Students failing in the examination will not be permitted to enter the regular algebra classes for engineering students until the deficiency is made up.

In the fall of 1906 and thereafter, students entering the College of Engineering will be required to present as part of the fourteen units required, an additional half unit of algebra, covering such ground as is hereinafter indicated.

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College of Agriculture. The studies required of all, under I, and either group C or group D, under II.

College of Law. The studies required of all, under I, and any one of the groups A, B, C, or D, under II.

Course in Commerce. The studies required of all, under I, and any one of the groups A, B, C, or D, under II.

Course in Pharmacy. FOUR YEARS' COURSE. The studies required of all, under I, and any one of the groups A, B, C, or D, under II. No practical experience in pharmacy is required. TWO YEARS' AND THREE YEARS' COURSE: I. Graduates from high schools are admitted without examination and without practical experience in a drug store. II. Non-graduates are admitted if they comply with the following requirements:—

1. They must be at least eighteen years of age.
2. They must present satisfactory certificates of at least one year's attendance from some standard high school, or its equivalent from a similar educational institution.
3. The time intervening between the secondary education and the college course should have been spent in a drug store, where physician's prescriptions are regularly compounded.

SCOPE OF THE PREPARATORY WORK.

The following description serves to indicate the extent of the preparation expected in each of the several subjects named in the preceding requirements for admission:

English.

ENGLISH. 2, 3 or 4 units. The two units in English required of all applicants for admission should be made up of composition and rhetoric, and readings in English classics, as follows:

COMPOSITION AND RHETORIC. All students entering the University will be examined in English composition. This examination will be a simple and practical one, designed to test the student's ability to express himself in clear, correct, idiomatic English. The student will be required to write an essay, or more than one, on a familiar theme, planning his work by paragraphs and constructing both paragraphs and sentences in accordance with the simpler principles of composition. No student will be passed whose work shows serious weakness in spelling, punctuation, grammar, or sentence structure; neatness of manuscript will also be taken into account. Facility of expression will not be considered an offset to serious weakness in spelling, punctuation, or grammar. Students found deficient in English composition who do not make up such deficiency in one year will be dropped from the University.

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READING OF CLASSICS. The following lists include (1) a series of books for general reading, which may also be used as a basis for work in English composition; (2) a limited number of masterpieces for thorough study. In addition to the essays called for under the head of Composition and Rhetoric there will be required such further tests as seem suited to secure a careful reading of all the books prescribed in series (1). In the case of the books set for more thorough study, the candidate will be examined on subject-matter, form, and substance, and the examination will be of such a character as to require a thorough study of each of the works named, in order to pass it successfully.

1. For General Reading and Composition work: 1903, 1904, 1905—the *Sir Roger de Coverley Papers*, Goldsmith's *Vicar of Wakefield*, Scott's *Ivanhoe*, Shakespeare's *The Merchant of Venice* and *Julius Caesar*, Coleridge's *The Ancient Mariner*, Carlyle's *Essay on Burns*, Tennyson's *The Princess*, Lowell's *The Vision of Sir Launfal*, George Eliot's *Silas Marner*.

2. For thorough study: 1903, 1904, 1905—Shakespeare's *Macbeth*, Milton's *Lycidas*, *Comus*, *L'Allegro* and *Il Penseroso*, Burke's *Speech on Conciliation with America*, Macaulay's essays on Milton and Addison.

In addition to these, it is expected that several other English classics will be read each year. The lives and characters of the authors read and the history of their times should be studied to a reasonable extent, but the chief aim should be *intelligent reading*. Particular attention should be given to enlarging the student's knowledge of vocabulary and idiom.

ENGLISH LITERATURE. One or two optional units may be offered in this subject in addition to the two prescribed units, described above. If one unit is offered, the work should include the history of English literature and the reading of representative authors of each period. The second optional unit may consist of additional work in the reading and study of the works of the chief English and American authors.

Mathematics.

ALGEBRA. 1 unit. This should include the following subjects: Addition, subtraction, multiplication, division, equations of the first degree with one unknown number, simultaneous equations of the first degree, factors, highest common factor, lowest common multiple, quadratic equations, simultaneous equations above the first degree, theory of indices (positive, negative, fractional, and zero), and radicals.

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ADVANCED ALGEBRA. ½ unit. An extra half year of Algebra is recommended, for which full credit will be given. (This half unit will be required of engineering students in 1906.) The work should cover the following subjects:

Simultaneous quadratic equations; ratio, proportion and variation, including graphical representation of simple relations between two variables; arithmetical and geometrical progressions; binomial theorem for positive integral exponents; logarithms, including use of tables in simple numerical work.

GEOMETRY. 1 unit. Plane and solid geometry. In solid geometry special attention should be given to the geometry of the sphere.

History, Civics, and Economics.

HISTORY. 1, 2, 3 or 4 units. The requirements in history may be satisfied by the presentation of any one of the following "blocks" recommended by the "Committee of Seven:"

Ancient History to the year 800 A. D., 1 unit.

Medieval and Modern History, 1 unit.

English History, 1 unit.

United States History, 1 unit.

One, two, or three additional blocks may be presented. A real equivalent may be presented in place of a block recommended by the "Committee of Seven," but a one year's course in General History will not be accepted after 1905.

CIVICS. ½ unit. A knowledge of the relationships existing between subordinate and higher political units together with a description of the chief functions performed by the institutions of the various political units.

Civics may be combined with History or Economics in the construction of an elective unit.

ECONOMICS. ½ unit. Either (1) a knowledge of the leading facts relating to the rise and growth of modern industry, with special reference to the industrial history of England and the United States; or, (2) a knowledge of the fundamental principles of economic science as presented in a good elementary treatise on the subject.

Science.

BOTANY. 1 unit. The course in botany should cover a study of the life histories of types from the main groups of plants, and should include also a series of simple physiological experiments. At least two-thirds of the course should consist of laboratory

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work. For further details see the report of the committee of the Wisconsin State Teachers' Association for 1902 on a high school course in botany.

Where it is not possible to give a full year's work to the subject, Botany may be combined with Physical Geography and Physiology in the construction of units.

CHEMISTRY. 1 unit. A year's course of descriptive chemistry, consisting of both class-room and laboratory work. This course should include the more common metals and non-metals and their compounds. Two periods of laboratory work are considered as equivalent to one class exercise. A careful record of laboratory experiments should be kept, which must be submitted for examination by the committee on entrance examinations. Remsen's *Introduction to the Study of Chemistry*, Hessler & Smith's *Essentials of Chemistry*, Storer and Lindsay's *Elementary Manual of Chemistry*, Clark and Dennis's *Elementary Chemistry*, are suitable text-books among the many published. A laboratory manual should be used with any text.

PHYSICS. 1 unit. A year's course in Physics, including continuous and systematic laboratory practice; any one of the standard text-books may be used.

PHYSICAL GEOGRAPHY. 1 unit. The Physical Geography should include: (1) The principles as presented in the best recent text-books, which give adequate treatment of the atmosphere and ocean and emphasize the development of topographic forms. (2) Field study. The nature of this must be controlled by the locality, but every candidate offering Physical Geography will be expected to submit a statement of the field trips required in his course. (3) The interpretation and habitual use of topographic maps, weather maps, charts, and pictures.

Where it is not possible to give a full year's work to the subject, Physical Geography may be combined with Botany and Physiology in the construction of units.

PHYSIOLOGY. ½ unit. In this subject instruction must be given in the anatomy, histology, and physiology of the human body, and the essentials of hygiene. The amount expected is indicated by that given in Martin's *The Human Body, Briefer Course*. The text-book work must be illustrated by charts and models, and the histology should also be shown by specimens.

ZOOLOGY. 1 unit. Instruction in this subject must include as much as four periods of laboratory work per week. The student must dissect at least eight or ten types of animals and make care-

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ful descriptions and drawings of this work. The types must be selected from the different branches of the animal kingdom. Knowledge of life histories and habits and relation of environment is also expected. The laboratory work must be accompanied with class exercises, so that the student may gain an intelligent appreciation of the meaning of his observations and of the bearing on zoological science of the facts observed by him. Lectures or text-book work on classification and general zoology must be a part of the course. The nature and scope of work expected may be indicated by the text-books of Needham, Davenport, Jordan, and Kellogg.

Language.

GREEK. 2 units. Grammar; Lessons; Xenophon's *Anabasis*, four books; Homer's *Iliad*, three books, or an equivalent amount of the *Odyssey;* Greek composition.

LATIN. 4 units. Grammar and elementary book; *Caesar*, four books, or an equivalent amount of *Nepos*, *Caesar* (at least two books) and selections; *Cicero*, six orations (selections from the letters may be substituted for two orations); *Vergil*, six books; composition; preferably in connection with *Caesar* and *Cicero*.

The statement above covers the 4 units of Latin in groups A and B. The requirements in these groups are planned with reference to the needs of those candidates who purpose to continue in the University the study of ancient and modern languages and of history.

LATIN. 2 units. Grammar and elementary book; *Caesar*, four books or an equivalent amount of *Nepos*, *Caesar* (at least two books) and selections; composition. Two units of Latin will be accepted when presented with two or more units of modern language, as specified in groups C and D. Students who so present two units and others whose preparation in Latin is, for any reason, deficient may continue the study in the University with course A (see p. 118), which may be credited towards the bachelor's degree. No such credit, however, will be given for third and fourth year high school Latin.

GERMAN. 2, 3, or 4 units. German may be offered for entrance as a subject of two, three, or four units, requiring respectively two, three, or four years of high school study and approximately corresponding to the "elementary," "intermediate," and "advanced" courses outlined in the "Report of the Committee of Twelve." This report can be procured, at the price of sixteen

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cents, from D. C. Heath & Co., Boston, and should be in the hands of every secondary teacher of German.

A. Elementary German. 2 units. Applicants should be able to pronounce and to translate at sight (into good idiomatic English) simple German prose, help being given upon unusual words and constructions, to put easy English sentences into German, and to carry on a very simple conversation based upon the texts set for translation. The required amount of grammar is contained in the current "brief" grammars, or in the "first parts" of larger grammars like Joynes-Meissner or Thomas. Of the strong verbs only the more usual are required. Applicants should have read not less than 200 pages of easy German, chiefly modern narrative prose, but including some simple poems and one or two short plays. For suitable texts see the "Report," pp. 63-64.

B. Intermediate German. In addition to the work outlined under A, applicants should have read from 300 to 400 pages of moderately difficult prose and poetry, with constant practice, both oral and written, upon portions of the texts read. Of the latter about one-half should be taken from modern prose and the other half from poetry and the easier plays of Schiller, Goethe, or Lessing. The work in grammar, accompanied by exercises in composition, should include the less usual strong verbs, the principal uses of prepositions, conjunctions, and modal particles, and the essentials of syntax and word formation. For suitable texts see the "Report," p. 71.

C. Advanced German. Besides the work outlined under *A* and *B*, applicants should have read from 400 to 500 pages of standard literature in prose and poetry, with reference reading in the history of modern German literature, especially upon the lives and works of the authors studied. They should be able to translate at sight any ordinary modern German text that is free from unusual difficulties, to write a brief German essay on a simple topic relating to the texts read, and to follow a recitation conducted in German, answering in that language questions asked by the instructor. For suitable texts see the "Report," p. 73.

Students entering with two years of German will begin their work in the University with one of the courses marked 2, 2M, 2S, 2C, or 2E. (See p. 130). Those entering with four years of German will, with the approval of the instructor, elect work from the "advanced practice courses" or from the undergraduate courses under "German literature." For those entering with three years of German a special course will be arranged, allowing them

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to take up one of the more advanced courses at the beginning of the second semester.

FRENCH. 2, 3, or 4 units. French may be offered for entrance as a subject of two, three, or four units, requiring respectively two, three, or four years of high school study, and approximately corresponding in difficulty to the "elementary," "intermediate," and "advanced" courses outlined in the "Report of the Committee of Twelve," pp. 113-117.

A. Elementary French. 2 units. The University desires that the effort of the elementary course be concentrated on that particular reading knowledge of French which is desired by the larger number of its students. What is offered by the applicant should accordingly be the following, or an equivalent amount of reading:

Otto's *French Conversation Grammar; Roman d'un Homme Pauvre* and *La Petite Fadette* (the former read mainly and the latter altogether independently of the class-room); *Le Cid, Le Misanthrope, Athalie.*

This course is expected to develop a fair pronunciation and knowledge of the essentials of grammar, especially syntax. The student is advised to spend his effort mainly on such texts as fully exhibit syntax difficulties in language free from technicality.

B. Intermediate French. The applicant should further have completed a conversation grammar, with practice in dictation, paraphrasing French, and reproducing from memory French which has been read to him. He should be able to use correctly the customary idioms of that language.

Or, if the applicant comes from another University, he may substitute approximately five hundred pages of critical reading in authors of intermediate difficulty.

C. Advanced French. The applicant should have continued the subject of composition to the point of simple essays, and have sufficient familiarity with spoken French to enable him to understand a simple lecture given in French, and to answer questions on it, in that language.

Or, if the applicant comes from another university, he may substitute approximately seven hundred and fifty pages of critical reading in such authors as Balzac or Victor Hugo (in his more difficult works).

Successful applicants who desire to continue the study of French in the University will be guided by this catalogue, p. 138,

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and by consultation with the members of the French instructional force.

MANUAL TRAINING. 1 unit. In order to present manual training for entrance, the applicant must have devoted 200 periods to each of the following two divisions of subjects:

(1) Shop Work
- a. Wood work.
- b. Forging.
- c. Chipping, filing and fitting.
- d. Machine tool work.

(2) Drawing
- e. Freehand drawing.
- f. Mechanical drawing.

(1) The course must include subdivision (a) and at least one of the subdivisions (b), (c), or (d). A note book containing a description and sketches of the work done is required.

(2) The course must include freehand and mechanical drawing. (e) Freehand drawings of simple objects—with and without shading. (f) In mechanical drawing the plates must be well executed and the problems include projections of geometrical solids and working drawings of simple machine parts.

EXAMINATIONS AT THE UNIVERSITY.

The regular examinations of the University are two in number, one in June and one in September. The earlier one is intended for those who wish to be examined while fresh from their preparatory studies, and for those who wish to test their qualifications at an early date in order that they may have time to make up deficiencies if necessary. The September examination immediately precedes the opening of the first semester.

For the current year the earlier examinations will be held on Thursday and Friday, June 2nd and 3rd, beginning at 9 o'clock A. M. The later examinations will be held on Tuesday and Wednesday, September 27th and 28th, beginning at 9 o'clock A. M. Students who are in any doubt as to their qualifications are urged to present themselves in June. All candidates are required to be present at 9 o'clock on the first day of the examinations.

Candidates for admission to the University may divide the subjects and take the examinations in two trials; but a failure to pass all of the subjects in the two trials will necessitate a complete re-examination.

The character of the entrance examinations is indicated by the extent of the preparation expected in each of the several

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branches, as described under the heading Scope of the Preparatory Work, p. 55.

ADMISSION UPON CERTIFICATE.

ACCREDITED SCHOOLS.—Any high school or academy whose course of instruction covers the branches requisite for admission to the University may be admitted to its accredited list of preparatory schools after a satisfactory examination by a committee of the Faculty. Application for such an examination may be made by an officer of the school to the President of the University, on the basis of which a committee of the Faculty will examine the course of study and the methods of instruction in the school, and on their favorable recommendation and the concurrence of the Faculty it will be entered upon the accredited list of the University. No school will be placed upon the list whose course of study is not fully equal to the four-year course of high schools recommended by the State Superintendent. The graduates of such an approved school will be received by the University without examination, on the presentation of a certificate showing the satisfactory completion of the 14 required units, as stated on p. 53, and containing the recommendation of the principal. Forms for such certificates, prepared by the University, must be used and may be obtained from the Registrar. These certificates should be sent to the University before August 1st.

Principals of accredited schools are requested to note the statement regarding the examination of freshmen in English, as stated on page 55, and also the statement regarding the additional requirement and examination in algebra for admission to the College of Engineering, as stated on p. 54.

The University desires to keep itself fully informed regarding the work of its accredited schools by means of annual reports and frequent inspections. Every accredited school is required to report each year concerning its teachers, course of study, methods of instruction, and material equipment. Blank forms are furnished by the University for this purpose. The University sends out inspectors at its own expense and at the convenience of the members of the staff. Especial attention is called to the necessity of promptly notifying the Secretary of the Committee on Accredited Schools of changes in the dates of examinations and vacations. The list of accredited schools will be found at the end of this section.

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GRADUATES OF THE STATE NORMAL SCHOOLS.

The certified standing of any student in the regular courses of the Normal Schools of this state will be accepted for entrance to the University in place of an examination in the subjects covered by the certificate.

The University offers a course designed especially for Normal School graduates and leading to the degree of Bachelor of Philosophy. This course includes advanced instruction in education and those studies in languages and science, both required and elective, which will best fit the graduate of our Normal Schools for the successful conduct of his chosen profession. To this course graduates of the Normal Schools will be admitted with the rank of junior on the presentation of their diplomas. Graduates of the Normal Schools who desire to become candidates for the degree of Bachelor of Arts will be given a provisional grade; the amount of work to be done in each individual case will be determined by the Committee on Advanced Standing. Full credit will be given for all work done in the Normal Schools which is equivalent to that of the University courses.

STUDENTS FROM OTHER COLLEGES AND UNIVERSITIES.

Students from other institutions, who have pursued standard college courses equivalent to those of the University will be admitted, and will receive credit for such courses upon the presentation of proper certificates of creditable standing and honorable dismissal. Students of other colleges of good standing who have not taken such standard courses, but who have studied one year in the college proper, may be admitted to the University provisionally. In such cases the amount of credit will be determined by the Committee on Advanced Standing. The University reserves the right to test by examination the records presented.

No person will be admitted to the University later than November 1st of the year in which he expects to graduate.

ADMISSION OF ADULT SPECIAL STUDENTS.

Persons twenty-one years of age, not candidates for a degree, who wish to take special studies in the College of Letters and Science and the College of Agriculture, are permitted to do so upon giving satisfactory evidence that they are prepared to take the desired studies advantageously. This privilege is granted in the College of Engineering only to such students as are able to

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meet all of the entrance requirements in mathematics. The privilege is not granted in the College of Law.

Adult special students who desire subsequently to become candidates for a degree must satisfy the regular entrance requirements.

LIST OF ACCREDITED SCHOOLS.

The list of accredited schools is arranged in groups in accordance with the grouping of the admission requirements as stated on pp. 53-54.

Group A.

School.	*Principal.*
Antigo,	M. E. KEATS.
Appleton: Ryan,	R. W. PRINGLE.
Ashland,	E. F. MEYER.
Aurora, Ill.: East,	W. F. GEIGER.
Aurora, Ill.: West,	C. E. BRIGGS.
Baraboo,	G. W. GEHRAND.
Bayfield,	E. C. GOTHAM.
Beaver Dam,	H. B. HUBBELL.
Beaver Dam: Wayland Academy,	E. P. BROWN.
Beloit,	F. E. CONVERSE.
Belvidere, Ill.: North,	O. J. SNYDER.
Belvidere, Ill.: South,	O. O. TOWNSEND.
Berlin,	P. J. ZIMMERS.
Bessemer, Mich.,	W. TALCOTT.
Black River Falls,	J. E. HALE.
Boone, Ia.,	ELIZABETH HAAS.
Boscobel,	M. C. PALMER.
Brodhead,	F. A. HARRISON.
Burlington,	W. H. HICKOK.
Burlington, Ia.,	M. RICKER.
Butte, Mont.,	H. M. HART.
Cedar Rapids, Ia.,	ABBIE S. ABBOTT.
Charleston, Ill.,	DE WITT ELWOOD.
Chicago, Ill., High Schools:	
Austin,	G. H. ROCKWOOD.
Calumet,	A. S. HALL.
Englewood,	J. E. ARMSTRONG.
Hyde Park,	C. W. FRENCH.
Jefferson,	C. A. COOK.

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School.	*Principal.*
Chicago, Ill., High Schools:—Lake	E. F. Stearns.
Lake View,	B. F. Buck.
Marshall,	L. J. Block.
McKinley, William,	G. M. Clayberg.
Medill,	E. C. Rosseter.
North-West Division,	F. P. Fisk.
South Chicago,	C. I. Parker.
South Division,	S. R. Smith.
Waller, Robert A.,	O. S. Wescott.
Chicago, Ill.: Harvard School,	J. J. Schobinger. J. C. Grant.
Chicago, Ill.: The University School,	H. H. Belfield. W. B. Owen.
Chicago, Ill.: Kenwood Institute,	Annice B. Butts.
Chippewa Falls,	A. L. Gesell.
Clinton,	R. E. Loveland.
Clinton, Ia.,	J. S. McCowen.
Colorado Springs, Colo.,	G. E. Myers.
Columbus,	G. E. Bunsa.
Council Bluffs, Ia.,	F. C. Ensign.
Culver, Ind.: Culver Military Academy,	A. F. Fleet.
Cumberland,	J. H. Ames.
Darlington,	C. G. Babcock.
Davenport, Ia.,	W. D. Wells.
Decatur, Ill.,	S. W. Ehrman.
Decorah, Ia.,	H. C. Johnson.
De Forest: Windsor Township,	E. C. Meland.
De Kalb, Ill.,	F. M. Giles.
Delafield: St. John's Military Academy,	S. T. Smythe.
Delavan,	I. B. Davies.
Denver, Colo.: District No. 1,	W. H. Smiley.
De Pere,	E. T. O'Brien.
Des Moines, Ia.: North,	W. E. D. Rummel.
Des Moines, Ia.: West,	W. O. Riddell.
Dixon, Ill.,	C. W. Groves.
Dodgeville,	F. J. Steuber.
Dubuque, Ia.,	F. L. Smart.
Duluth, Minn.,	C. A. Smith.
Eau Claire,	M. S. Frawley.
Edgerton	W. A. Clark.
Elgin, Ill.,	E. J. Kelsey.

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School.	*Principal.*
Elkhorn,	T. J. JONES.
Escanaba, Mich.,	ANNA M. CHANDLER.
Evanston, Ill.: Evanston Township,	H. L. BOLTWOOD.
Evansville,	A. H. SHOLTZ.
Evansville, Ind.,	R. SPEAR.
Faribault, Minn.: Shattuck School,	JAMES DOBBIN.
Fond du Lac,	ELIZABETH A. WATERS.
Fond du Lac: Grafton Hall,	B. TALBOT ROGERS.
Fort Atkinson,	J. A. HAGEMANN.
Freeport, Ill.,	S. E. RAINES.
Galena, Ill.,	P. H. CLARK.
Grand Rapids,	KATE MCKERCHER.
Green Bay: East Side,	W. O. BROWN.
Green Bay: West Side,	H. H. HENDRICKSON.
Harvey, Ill.: Thornton Township,	J. E. CABLE.
Highland Park, Ill.,	W. A. WILSON.
Hillside Home School,	ELLEN C. LLOYD-JONES JANE LLOYD-JONES
Hinsdale, Ill.,	MARION MCNAIR.
Hudson,	M. N. MCIVER.
Indianapolis, Ind.,	G. W. BENTON.
Indianapolis, Ind.: Manual Training High School,	C. E. EMMERICH.
Iron Mountain, Mich.,	J. F. REED.
Ironwood, Mich.,	J. B. PATRICK.
Ishpeming, Mich.,	MAY MCKITRICK.
Janesville,	H. C. BUELL.
Jefferson,	M. M. MUENICH.
Joliet, Ill.,	J. S. BROWN.
Kankakee, Ill.,	I. E. NEFF.
Kaukauna,	A. M. OLSON.
Kenosha,	W. J. HAMMILL.
Keokuk, Ia.,	J. BENJAMIN.
La Crosse,	W. R. HEMMENWAY.
La Grange, Ill.: Lyons Township,	E. R. COLE.
Lake Forest, Ill.: Lake Forest School for Boys,	J. C. SLOANE.
Lake Geneva,	H. M. SNOW.
Lancaster,	C. E. SLOTHOWER.
Leadville, Colo.,	A. P. TROTH.
Lodi,	S. M. W. THOMAS.

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School.	*Principal.*
McGregor, Ia.,	Josephine Harrison.
Macon, Mo.: Blees Military Academy,	J. R. Richards.
Madison,	J. H. Hutchison.
Madison: Wisconsin Academy,	Charlotte E. Richmond.
Manitowoc: South Side,	W. E. Luehr.
Marinette,	C. E. Cullen.
Marquette, Mich.,	A. A. Kienholz.
Marshalltown, Ia.,	E. U. Graff.
Marshfield,	J. B. Borden.
Mazomanie,	F. G. Kraege.
Medford,	F. W. Thomas.
Menasha,	John Callahan.
Mendota, Ill.: Blackstone,	M. J. Howes.
Menominee, Mich.,	W. L. German.
Menomonie,	T. R. Lloyd-Jones.
Merrill,	G. J. Roberts.
Milton Junction,	H. D. Laube.
Mineral Point,	J. F. Bergen.
Milwaukee: East Division,	G. A. Chamberlain.
Milwaukee: South Division,	E. Rissman.
Milwaukee: West Division,	C. E. McLenegan.
Milwaukee Academy,	J. H. Pratt, Jr.
Milwaukee-Downer Col., Seminary Dept.,	Ellen C. Sabin.
Milwaukee: Marquette Academy,	A. J. Burrowes.
Moline, Ill.,	F. A. Thomas.
Monroe,	G. W. Swartz.
Morgan Park, Ill.: Morgan Park Academy,	Wayland Chase.
Neenah,	E. M. Beeman.
New Richmond,	C. J. Brewer.
Oak Park, Ill.,	J. C. Hanna.
Oconomowoc,	Wm. Kittle.
Oconto,	C. A. H. Fortier.
Omaha, Nebr.,	A. M. Waterhouse.
Orchard Lake, Mich.: Michigan Military Academy,	L. C. Hull.
Oshkosh,	A. B. O'Neil.
Plymouth,	W. B. Collins.
Portage,	W. G. Clough.
Poynette,	C. E. Lamb.
Prairie du Chien,	P. A. Kolb.
Pueblo, Colo.: District No. 1,	J. M. Downer.

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School.	*Principal.*
Quincy, Ill.,	J. E. PEARSON.
Racine,	E. W. BLACKHURST.
Racine College,	H. D. ROBINSON.
Reedsburg,	W. P. ROSEMAN.
Rensselaer, Ind.,	W. O. HIATT.
Rhinelander	F. A. LOWELL.
Richland Center,	G. E. PRATT.
Ripon,	V. A. SUYDAM.
River Falls,	J. W. T. AMES.
Riverside, Ill.,	A. F. AMES.
Rochester Academy,	J. F. EATON.
Rockford, Ill.,	B. D. PARKER.
Rock Island, Ill.,	H. E. BROWN.
Salt Lake City, Utah,	G. A. EATON.
San Jose, Cal.,	R. D. HUNT.
Shawano,	J. LEIDENBERG.
Sheboygan,	A. D. TARNUTZER.
Shullsburg,	H. MURLEY.
Sinsinawa: St. Clara Academy,	DOMINICAN SISTERS.
Sioux City, Ia.,	G. E. MARSHALL.
South Bend, Ind.,	C. H. BARTLETT.
Sparta,	F. M. JACK.
Spokane, Washington,	H. T. COLEMAN.
Sterling, Ill.: Sterling and Coloma Township,	E. T. AUSTIN.
Stevens Point,	F. F. SHOWERS.
Stoughton,	A. W. WEBER.
Sturgeon Bay,	C. G. STANGEL.
Superior: Blaine,	B. B. JAMES.
Superior: Nelson Dewey,	A. C. SHONG.
Tomah,	C. H. MAXSON.
Tuscola, Ill.,	G. F. ARPS.
Two Rivers,	A. A. THOMSON.
Viroqua,	S. E. PEARSON.
Washburn,	D. E. CAMERON.
Watertown,	C. F. VIEBAHN.
Waukesha,	H. L. TERRY.
Waukesha: Carroll College,	W. O. CARRIER.
Waupaca,	G. O. BANTING.
Waupun,	G. F. LOOMIS.
Wausau,	C. C. PARLIN.

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School.	*Principal.*
Wauwatosa,	F. M. MERICA.
Webster City, Ia.,	L. H. FORD.
West De Pere,	J. V. BRENNAN.
West Salem,	O. H. MILLER.
Whitewater,	C. W. RITTENBURG.
Winona, Minn.,	W. A. BARTLETT.
Group B.	
Cherokee, Ia.,	A. V. STORM.
Manitowoc: North Side,	P. G. W. KELLER.
Mauston,	W. E. UTENDORFER.
Morrison, Ill.,	ELLA N. ELLSWORTH.
Oregon, Ill.,	ADELAIDE M. STEELE.
Red Oak, Ia.,	E. E. RALL.
Group D.	
Algoma,	B. O. DODGE.
Appleton: Third Ward,	R. E. CARNCROSS.
Arcadia,	H. A. SNOWDON.
Augusta,	W. H. SHEPHARD.
Bangor,	J. J. NEUMAN.
Barron,	F. H. SWENSON.
Brandon,	A. B. HOUGHTON.
Charles City, Ia.,	G. S. DICK.
Chilton,	G. M. MORRISSEY.
Chippewa Falls: Notre Dame School,	SISTER M. ESTELLE.
Clintonville,	W. E. SWITZER.
Colby,	P. W. L. BOEHM.
Deerfield,	O. S. RICE.
Durand,	R. B. PEASE.
East Troy,	J. WINDEN.
Elroy,	W. S. HAKE.
Evansville Seminary,	E. G. BURRITT.
Fennimore,	E. L. ROETHE.
Florence,	W. T. DARLING.
Fox Lake,	AUGUST GRIMM.
Galesville,	W. H. FLEMING.
Gladstone, Mich.,	J. H. MCDONALD.
Glenwood,	O. V. THIELE.
Hartford,	D. C. GILE.
Highland,	A. L. MCDERMOTT.

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School.	*Principal.*
Horicon,	F. W. HEIN.
Kewanee, Ill.,	T. M. BIRNEY.
Kewaunee,	M. MCMAHON.
Lake Mills,	A. B. WEST.
Louisville, Ky.: Manual Training High School,	E. P. CHAPIN.
Marshall,	J. B. BALDWIN.
Mason City, Ia.,	L. D. ELLIS.
Mayville,	L. S. KEELEY.
Mondovi,	J. W. NESBIT.
Montfort,	MILTON ORCHARD.
Necedah,	W. E. ELMER.
Negaunee, Mich.,	R. W. PATTENGILL.
Neillsville,	L. W. WOOD.
New Lisbon,	FRED THOMSON.
New London,	W. J. HAMILTON.
Omro,	E. E. SHELDON.
Onalaska,	J. H. JORDON.
Oregon,	FRANKLIN GOULD.
Phillips,	B. W. BRIDGMAN.
Prairie du Sac,	JOHN DIXON.
Rice Lake,	E. C. MCCLELLAND.
Sandwich, Ill.,	W. W. WOODBURY.
Sauk City,	R. A. BRANDT.
Seymour,	F. W. AXLEY.
Sharon,	J. H. STAUFF.
Sheboygan Falls,	A. C. KINGSFORD.
Spring Green,	C. N. HILL.
Sun Prairie,	T. T. BLAKELY.
Tomahawk,	W. H. JAMIESON.
Waterloo,	K. L. HATCH.
Weyauwega,	J. J. ENRIGHT.
West Bend,	C. H. DIETZ.

Not Accredited for German or French.

Argyle,	R. B. RUNKE.
Black Earth,	L. C. HATCH.
Fairchild,	TAYLOR FRYE.
Juneau,	D. E. MCLANE.
Osceola,	LELAH PRESTON.
Port Washington,	A. A. BLANDIN.

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FEES AND EXPENSES.

GENERAL REQUIREMENTS.

All fees must be paid at the beginning of each semester, except in the College of Law, where they must be paid at the beginning of the academic year. Until this has been done, cards entitling the student to admission to classes will not be issued. Graduate students, except honorary fellows, pay the same fees as undergraduates, whether they are in attendance at the University or *in absentia*. University scholars are required to pay the regular incidental fee, but not the non-resident fee.

Tuition is free for all students from the State of Wisconsin, except in the College of Law. No fees are returned except by special action of the Regents.

TUITION AND FEES.

College of Letters and Science.

Resident tuition	FREE.
Non-resident tuition, per semester	$15 00
Incidental fee for all students, per semester	10 00
Additional fee for students electing studies in the College of Law, per year	25 00

College of Engineering and Course in Pharmacy.

Resident tuition	FREE.
Non-resident tuition, per semester	$20 00
Incidental fee for all students, per semester	15 00

College of Agriculture.

Resident tuition	FREE.
Long course, non-resident tuition, per semester	$15 00
For all in long course, incidental fee, per semester	10 00
Short course, non-resident tuition, per term	15 00
For all in short course, incidental fee, per term	5 00
Dairy course, non-resident tuition, per term	15 00
For all in dairy course, incidental fee, per term	5 00
For non-residents in dairy course, lecture fee	10 00

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College of Law.

Tuition fee, first year	$ 75 00
Tuition fee, second year	50 00
Tuition fee, third year	25 00
Graduate fees	50 00
Tuition fee for students graduating in one year	100 00

The fees for students graduating in two years are the same as for the first two years of the three-year course.

There is no additional fee for non-resident students in this college.

Summer Session of the College of Letters and Science, and Summer Session for Apprentices and Artisans.

General fee	$15 00

Summer School of Library Science.

Resident tuition	$10 00
Non-resident tuition	15 00

School of Music.

Persons who are members of other colleges of the University may take the general courses in music without charge. Members of the School of Music and other departments, who take special lessons, will pay fees as stated in the announcement of the school on a subsequent page of this catalogue.

FEES FROM CANDIDATES FOR HIGHER DEGREES.

From all candidates for advanced degrees a diploma fee of $5 is required, payable to the Secretary of the Regents one month before Commencement, and no diploma will be made out until such fee has been paid. If for any reason the degree is not conferred the fee will be returned.

Each candidate for the degree of Doctor of Philosophy must deposit in the University library one hundred printed copies of his thesis. If the thesis is printed in a journal or as a bulletin of the University, reprints therefrom will be accepted by the library, but these must be provided with a special cover in proper thesis form. The candidate may receive his diploma before the thesis is printed, provided a written or typewriten copy of the thesis is deposited with the Librarian, and the sum of $50 with

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the Secretary of the Regents. The money will be returned on presentation to the library of the required number of printed copies of the thesis.

LABORATORY FEES.

BIOLOGICAL LABORATORIES.—The laboratory fee for the elementary course in biology and for most of the advanced courses is $8 per year. The fee for vertebrate histology and embryology is $8 per semester. The fee for bacteriology is $1.50 for each unit hour of credit. In addition to this there is a breakage fee of $2.50 a semester.

CHEMICAL LABORATORIES.—In these laboratories the deposit for a year's course is $20. The amount refunded will depend on the chemicals used and the care exercised by the student. The ordinary cost of a year's course is from $15 to $20.

GEOLOGY AND MINERALOGY.—Blowpipe analysis, per semester, $6; blowpipe analysis, two-fifths study, $4; three-fifths study, $6; petrography, per semester, $6.

PHYSICAL LABORATORIES.—The laboratory fee in the physical laboratories is $2 for each unit-hour (two hours per week of actual work) per semester.

PSYCHOLOGICAL LABORATORY.—The laboratory fee for the course in experimental psychology is $3; for other experimental work $3 per semester, or $5 per year.

COLLEGE OF MECHANICS AND ENGINEERING.—The charge for laboratory work is $2.00 per unit-hour (two hours per week of actual work) per semester. There is also a charge of $1.00 per year for periodicals, supplied to the engineering reading room.

COURSE IN PHARMACY.—For general laboratory privileges a charge is made of $1 per unit-hour and semester. A separate account will be kept with the accountant of the storage room for special apparatus and material. The student will purchase coupons from the Secretary of the Regents ($5 at a time) and present them at the storage room. At the end of the year full credit will be given for such pieces of apparatus as are taken back, in accordance with the rules of the storage room.

COLLEGE OF AGRICULTURE.—The following laboratory fees are required: Dairy school laboratory for residents $5, for non-residents $15; advanced dairy course, $6; pasteurizing course, $1; short course laboratory, for non-residents, $10; blacksmithing, $3; carpenter work, $3; long course students in bacteriology pay the same fees as students in general biology.

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Long course students taking chemical work pay for gas and for apparatus at the same rate as in the general chemical laboratory.

In the department of Agricultural Physics students who take soil work are required to pay a laboratory fee of $1 for each unit-hour per semester.

GYMNASIUM PRACTICE AND MILITARY DRILL.

Young Men in the College of Letters and Science, College of Mechanics and Engineering, and the four-year courses in agriculture and pharmacy, are required to take gymnastic exercises during the first two years of their course, and are also required to take military drill. Students required to drill must provide themselves with a uniform, of color and pattern required by the Regents, the cost of which is about $15.

Gymnasium fee	$2 00
Locker fee	1 50

Young women are required to take gymnastic exercises during the first two years of their course. A gymnasium fee of $1 per year is required, and $1 additional from those who make use of a locker. They must also provide themselves with a suitable costume, directions for which will be found on a subsequent page under the heading Physical Training.

CHADBOURNE HALL.

The price of rooms in Chadbourne Hall varies from $40 to $95 a year, according to location. A circular giving detailed information may be obtained by addressing the Secretary of the Regents.

Application for rooms in the Hall may be made at any time to the Secretary of the Regents, and must always be accompanied by a deposit of $10.

Rooms are assigned after September 1st by the Mistress of the Hall in the order of application; but a person occupying a room may retain it the succeeding year by making application on or before May 1st. The deposit of $10 required from all students, new as well as old, when making application, will be credited on the rent of the room, if taken, but if not taken it will be forfeited, unless notification is received by the Secretary of the Regents prior to September 1st. The balance due for rent must be paid to the Secretary, not later than the second week after the beginning of each semester.

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If for any reason one of the occupants of a suite shall be obliged to give up her place in the suite, the remaining person may be required to take a single room, if one is vacant, or pay the price for the full suite during the time it is occupied by her alone.

A person entering the Hall for the second semester only shall pay the price of the room charged for the second semester, with the additional sum of $10.

The rooms of Chadbourne Hall are carpeted and furnished, but occupants are expected to provide washstand furniture, towels, napkin rings, sheets, pillow cases, counterpanes, and blankets.

At present the cost of board in Chadbourne Hall is $3.50 a week. Any commutation of charges for board in cases where students leave before the close of the semester, except in case of necessity, is entirely voluntary with the matron in charge.

Chadbourne Hall has accommodations for one hundred women students. It is lighted by electricity, and the heating apparatus is connected with the central heating plant, so that the danger from fire is minimized. Elevators operated by electricity connect the several floors.

The young women that occupy this building are under the immediate charge of the Mistress of the Hall; they must board in the Hall, and are expected cheerfully to conform to the requirements necessary for a family of students.

An account of the women's gymnasium in Chadbourne Hall may be found under the heading Physical Training, p. 281.

ROOMS AND BOARD.

Rooms, furnished and unfurnished, can be obtained in the city at prices per week ranging from $1 to $4 a person. The cost of board in clubs is from $2.50 to $3 a week; in private families from $3 to $4 a week. Many students obtain rooms or board in families or clubs by rendering service; but these places are eagerly sought for, and cannot always be obtained at once. Those dependent upon themselves for support should not come to the University unless they have a reasonable reserve fund.

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DEGREES.

FIRST DEGREES.

The following baccalaureate degrees are conferred upon those who have successfully completed the prescribed courses of study, and who have complied with all other requirements of the University:

Academic.

BACHELOR OF ARTS, upon the graduates in the College of Letters and Science, except those from the course for Normal School graduates, and from the course in Pharmacy.

BACHELOR OF PHILOSOPHY, upon the graduates from the course for Normal School graduates.

Professional and Technical.

BACHELOR OF LAWS.

BACHELOR OF SCIENCE IN AGRICULTURE.

BACHELOR OF SCIENCE, CIVIL ENGINEERING COURSE.

BACHELER OF SCIENCE, SANITARY ENGINEERING COURSE.

BACHELOR OF SCIENCE, MECHANICAL ENGINEERING COURSE.

BACHELOR OF SCIENCE, CIVIL ENGINEERING COURSE.

BACHELOR OF SCIENCE, GENERAL ENGINEERING COURSE.

BACHELOR OF SCIENCE, APPLIED ELECTROCHEMISTRY COURSE.

BACHELOR OF SCIENCE, PHARMACY COURSE, upon graduates of the four years' course in Pharmacy.

GRADUATE IN PHARMACY, upon graduates from the two years' course in Pharmacy.

A graduate of any one of the courses may receive the baccalaureate degree of any other course by completing the additional studies required in that course. But two baccalaureate degrees cannot be taken in one year, and for a second bachelor's degree in the College of Letters and Science there are required one year's additional study and a special thesis.

The conditions on which the bachelor's degrees are given will be found stated under the appropriate colleges and courses on subsequent pages.

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HIGHER DEGREES.

The highest degree that the University confers in course is that of *Doctor of Philosophy.* The degree of *Master of Arts* is conferred as a second degree upon candidates who have the degree of *Bachelor of Arts* or an equivalent, and the degree of *Master of Science* upon candidates who have the degree of *Bachelor of Science.* Candidates who have the degree of *Bachelor of Science* in one of the engineering courses may receive the degree of *Civil Engineer, Mechanical Engineer,* or *Electrical Engineer.* The degree of *Master of Pharmacy* is conferred as a second degree upon *Graduates in Pharmacy.*

The conditions on which these higher degrees are granted will be found stated under the Graduate School, p 307, and also under the various colleges.

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THE COLLEGE OF LETTERS AND SCIENCE.

STAFF OF INSTRUCTION.

CHARLES R. VAN HISE, Ph. D., LL. D., President of the University.
E. A. BIRGE, Ph. D., Sc. D., LL. D., Dean, and Professor of Zoology.

T. S. ADAMS, Ph. D., Assistant Professor of Economics and Statistics.
*C. R. BARDEEN, M. D., Professor of Anatomy.
*D. E. BURCHELL, Assistant Professor of Business Administration.
W. B. CAIRNS, Ph. D., Assistant Professor of English.
VICTOR COFFIN, Ph. D., Assistant Professor of European History.
*JOHN R. COMMONS, Ph. D., Professor of Political Economy.
G. C. COMSTOCK, Ph. B., LL. B., Professor of Astronomy.
C. A. CURTIS, A. B., Professor of Military Science and Tactics.
W. W. DANIELLS, M. S., Sc. D., Professor of Chemistry.
R. E. N. DODGE, M. A., Assistant Professor of English.
L. W. DOWLING, Ph. D., Assistant Professor of Mathematics.
J. C. ELSOM, M. D., Professor of Physical Training.
R. T. ELY, Ph. D., LL. D., Professor of Political Economy.
A. B. FAUST, Ph. D., Assistant Professor of German.
N. M. FENNEMAN, Ph. D., Professor of General and Physiographic Geology.
RICHARD FISCHER, Ph. D., Assistant Professor of the Theory and Practice of Pharmacy.
C. R. FISH, Ph. D., Assistant Professor of American History.
G. C. FISKE, Ph. D., Assistant Professor of Latin.
D. B. FRANKENBURGER, A. M., LL. B., Professor of Rhetoric and Oratory.
J. C. FREEMAN, LL. D., Professor of English Literature.
W. D. FROST, Ph. D., Assistant Professor of Bacteriology.
LUCY M. GAY, B. L., Assistant Professor of French.
W. F. GIESE, A. M., Assistant Professor of Romance Languages.
R. A. HARPER, Ph. D., Professor of Botany.
G. L. HENDRICKSON, B. A., L. H. D., Non-resident Professor of Latin.

*Begins service July 1st, 1904.

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H. W. HILLYER, Ph. D., Assistant Professor of Organic Chemistry.
W. H. HOBBS, Ph. D., Professor of Mineralogy and Petrology.
A. R. HOHLFELD, Ph. D., Professor of German.
F. G. HUBBARD, Ph. D., Professor of the English Language.
CAROLINE L. HUNT, A. B., Professor of Home Economics.
*JOSEPH JASTROW, Ph. D., Professor of Psychology.
LOUIS KAHLENBERG, Ph. D., Professor of Physical Chemistry.
ALEXANDER KERR, A. M., Professor of the Greek Language and Literature.
EDWARD KREMERS, Ph. G., Ph. D., Professor of Pharmaceutical Chemistry.
A G. LAIRD, Ph. D., Assistant Professor of Ancient Languages.
H. B. LATHROP, A. B., Associate Professor of English Literature.
C. K. LEITH, Ph. D., Professor of Economic and Structural Geology.
VICTOR LENHER, Ph. D., Assistant Professor of General and Theoretical Chemistry.
W. S. MARSHALL, Ph. D., Assistant Professor of Zoology.
ABBY S. MAYHEW, Assistant Professor of Physical Culture.
C. E. MENDENHALL, Ph. D., Assistant Professor of Physics.
B. H. MEYER, Ph. D., Professor of Institutes of Commerce.
JESSIE M. MEYER, B. S., Mistress of Chadbourne Hall.
W. S. MILLER, M. D., Assistant Professor of Anatomy.
D. C. MUNRO, A. M., Professor of European History.
J. E. OLSON, B. L., Professor of the Scandinavian Languages and Literature.
M. V. O'SHEA, B. L., Professor of the Science and Art of Education.
E. T. OWEN, Ph. D., Professor of the French Language and Literature.
F. A. PARKER, Professor of Music.
J. B. PARKINSON, A. M., Professor of Constitutional and International Law.
J. F. A. PYRE, Ph. D., Assistant Professor of English Literature.
P. S. REINSCH, Ph. D., Professor of Political Science.
E. C. L. C. ROEDDER, Ph. D., Assistant Professor of German Philology.
W. A. SCOTT, Ph. D., Professor of Economic History and Theory.
F. C. SHARP, Ph. D., Assistant Professor of Philosophy.
GRANT SHOWERMAN, Ph. D., Assistant Professor of Latin.
E. B. SKINNER, Ph. D., Assistant Professor of Mathematics.

*On leave of absence for the second semester, 1903-04.

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*M. S. SLAUGHTER, Ph. D., Professor of Latin.
C. S. SLICHTER, M. S., Professor of Applied Mathematics.
C. F. SMITH, Ph. D., Professor of Greek and Classical Philology.
B. W. SNOW, Ph. D., Professor of Physics.
S. E. SPARLING, Ph. D., Assistant Professor of Political Science.
†J. W. STEARNS, LL. D., Professor of Philosophy and Pedagogy.
*SUSAN A. STERLING, M. L., Assistant Professor of German.
A. W. TRESSLER, A. B., Assistant Professor of Pedagogy.
AUGUSTUS TROWBRIDGE, Ph. D., Professor of Mathematical Physics.
‡F. J. TURNER, Ph. D., Professor of American History.
C. A. VAN VELZER, Ph. D., Professor of Mathematics.
E. K. J. H. VOSS, Ph. D., Professor of German Philology.
W. H. WILLIAMS, A. B., Professor of Hebrew and Hellenistic Greek.
§J. A. WOODBURN, Ph. D., Professor of American History.

PHILIP ADAMS, A. B., Instructor in English.
B. M. ALLEN, Ph. D., Instructor in Comparative Anatomy.
C. E. ALLEN, B. S., Instructor in Botany.
FLORENCE E. ALLEN, M. L., Instructor in Mathematics.
KATHERINE ALLEN, Ph. D., Instructor in Latin.
E. D. ANGELL, Instructor in Gymnastics.
S. H. BALL, A. B., Assistant in Geology.
G. J. BALZER, A. B., Assistant in Physics.
J. D. BARNETT, A. B., Assistant in Political Science.
ARTHUR BEATTY, Ph. D., Instructor in English.
R. C. BENNER, D. S., Assistant in Chemistry.
E. S. BISHOP, B. L., Assistant in Physics.
W. G. BLEYER, M. L., Instructor in English.
B. H. BODE, Ph. D., Instructor in Philosophy.
I. W. BRANDEL, M. S., Instructor in Pharmaceutical Technique.
H. G. A. BRAUER, Ph. D., Instructor in French.
E. A. BREDIN, Instructor in Music.
A. C. L. BROWN, Ph. D., Instructor in English.
P. G. A. BUSSE, A. M., Instructor in German.
A. H. CHRISTMAN, B. S., Student Assistant in Botany.
A. L. COLTON, M. A., Instructor in Physics.
E. A. COOK, B. L., Instructor in English.

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*On leave of absence for the year 1903-04.
†Resigned January 1st, 1904.
‡On leave of absence for the second semester, 1903-04.
§For the first semester, 1903-04.

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A. R. CRATHORNE, B. S., Instructor in Mathematics.
M. L. DAGGY, Ph. B., Instructor in Rhetoric and Oratory.
W. L. DAVIS, Student Assistant in Pedagogy.
R. H. DENNISTON, B. S., Instructor in Pharmaceutical Botany.
A. R. DENU, B. L., Instructor in Rhetoric and Oratory.
T. H. DICKINSON, M. A., Instructor in English.
JEROME DOWD, M. A., Resident Lecturer in Sociology.
M. B. EVANS, Ph. D., Instructor in German.
M. G. FRAMPTON, M. A., Instructor in English.
S. H. GOODNIGHT, M. A., Assistant in German.
C. H. HANDSCHIN, Ph. D., Instructor in German.
S. M. HERFURTH, M. L., Assistant in German.
H. P. HOLMAN, A. B., Assistant in Chemistry.
J. G. HOLTY, B. S., Assistant in Chemistry.
E. B. HUTCHINS, JR., M. S., Assistant in Analytical Chemistry.
F. T. KELLY, Ph. D., Instructor in Hebrew and Hellenistic Greek.
MARION B. LAMONT, Instructor in Elocution.
M. O. LORENZ, A. B., Instructor in Economics.
EDITH K. LYLE, Ph. D., Assistant in History.
R. B. MACNISH, B. L., Instructor in French.
W. G. MARQUETTE, B. S., Assistant in Botany.
F. C. MCKINNEY, M. A., Instructor in English.
F. W. MEISNEST, B. S., Instructor in German.
L. F. MILLER, M. A., Instructor in Physics.
GEORGIANA L. MORRILL, Ph. D., Instructor in English.
H. B. NORTH, Ph. G., Student Assistant in Chemistry.
A. M. O'DEA, Instructor in Athletics.
H. E. PATTEN, Ph. D., Instructor in Chemistry.
OTTO PATZER, M. L., Instructor in French.
W. M. PERSONS, B. S., Instructor in Mathematics.
ADOLPH PFUND, A. B., Assistant in German.
U. B. PHILLIPS, Ph. D., Instructor in History.
ANNIE M. PITMAN, Ph. D., Assistant in Latin.
JAMES WILLIAM PUTNAM, M. A., Assistant in History.
FRANK RABAK, Ph. G., Laboratory Assistant in Pharmacognosy.
FERDINAND SCHMITTER, A. B., M. D., Instructor in Anatomy.
G. C. SELLERY, Ph. D., Instructor in European History.
A. R. SEYMOUR, M. L., Instructor in French.
HELEN SHERMAN, B. S., Laboratory Assistant in Botany.
F. L. SHINN, A. M., Assistant in Physical Chemistry.
J. D. SUTER, Student Assistant in Mathematics.
A. H. TAYLOR, B. S., Instructor in Physics.

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H. C. TAYLOR, Ph. D., Instructor in Commerce.
E. M. TERRY, A. B., Assistant in Physics.
C. A. TIBBALS, JR., Student Assistant in Chemistry and Assaying.
A. C. TILTON, Ph. D., Instructor in European History.
E. G. TOAN, B. A., Assistant in Physics.
J. E. TUTHILL, M. A., Assistant in European History.
M. E. TWEEDEN, Ph. G., Assistant in Practical Pharmacy.
ELSBETH VEERHUSEN, Ph. D., Assistant in German.
GEORGE WAGNER, M. S., Instructor in Zoology.
H. C. WOLFF, M. S., Instructor in Mathematics.

REQUIREMENTS FOR THE DEGREE OF BACHELOR OF ARTS.

1. General Conditions.

The unit-hour is the standard for computing the amount of work required for graduation. This is equal to one hour of recitation or lecture per week for one semester. Two hours of laboratory work or two hours regularly prescribed military drill or physical exercise in the gymnasium are credited as one unit-hour. Students are expected to take 15 hours per week in recitations, lectures, and laboratory work, making 30 unit-hours per year, and 120 for the course. In addition two hours per week (one unit-hour per semester) of gymnastics are required during the first two years, making a total of four unit-hours. The men are required to drill two hours per week during the first two years, giving a credit of four unit-hours. The total requirements for class-room work, military drill, and the gymnasium are, therefore, 128 unit-hours for the men, and 124 for the women.

Students excused from drill or gymnastics are required either to make up the work before graduation, or if the excuse is based on permanent incapacity, to make good the requirement by work in other departments.

No student will be permitted to receive a credit toward graduation of more than eighteen unit-hours in one semester in regular studies except by permission of the Faculty, obtained in advance.

2. Required Studies.

a. English, 6 unit-hours (3 hours per week for two semesters); to be taken in the first year of residence.

b. Language: 16 unit-hours for those who offer four years or more of language at entrance; 24 unit-hours for those who offer less than four years of language at entrance. The work shall be

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in year courses in two languages, which must be chosen from the following group: Greek, Latin, French, German.

Advanced work in another foreign language may be substituted in part fulfillment of this requirement, the amount thus substituted not to exceed 8 unit hours. Thus, if the student desires to take Norse or Hebrew, for example, as one of the required languages, he may do so on the following conditions: (1.) He must study the language more than one year. (2.) The work beyond the first year ("advanced work") is that to be substituted. (3.) Not more than 8 hours of this language may be so used. The remainder of the required language must be in one of the four languages named above. By "Greek" is understood classical Greek.

c. Two of the following: Natural Science, 10 unit-hours; Mathematics, 6 unit-hours; History, 6 unit-hours.

Under natural science are included biology, chemistry, physics, and geology. The latter science cannot be taken in the freshman year; the others may be so elected. All are five-hour courses with laboratory work, or field work in geology.

3. Major Study and Thesis.

Major Study.—At the beginning of the sophomore or the junior year, every candidate for the degree of Bachelor of Arts shall select as his major subject the work of some one department in the College of Letters and Science. This department will determine the manner in which the work of the major shall be completed; the work required in the major (including thesis and required work) shall not be less than 20 hours, nor more than 40 hours.

Thesis.—All candidates for a baccalaureate degree are required to present a graduating thesis, the subject of which must be approved by the student adviser and the professor at the head of the department in which the candidate is doing the work represented by the thesis. The thesis must represent some phase of the student's work in his major study, and must have the character of a scholarly dissertation on the subject. The thesis must be typewritten on paper of good quality, 8x10 inches in size, and must be bound according to specifications furnished by the Librarian of the University.

Before the thesis is accepted, it must be approved by the instructor under whom the work has been done, and by the head of the department. When accepted, the thesis becomes the property of the University, and is deposited in the University library. Theses in the College of Letters and Science must be completed and deposited in the library by June 1st.

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4. Electives.

All work not included in 2 and 3 is elective, but there shall not be taken in any one department more than 40 hours, including required work in excess of 6 hours, major and electives. However, high school work for which university credit is given shall not count as a part of these 40 hours.

5. Studies of the Freshman Year.

In this year one study only is absolutely required: English, course 1, three hours per week. All the other studies of the year must be chosen from the following groups:

GROUP I. At least one subject must be taken from this group and not more than 10 unit-hours may be chosen from any one subject.

Greek: 5 or 3 hours per week.
Latin: 5 or 3 hours per week.
German: 4 hours per week.
French: 4 hours per week.
Spanish: 4 hours per week (in Course in Commerce).

GROUP II. At least one subject must be chosen from this group. Not more than 10 unit-hours can be taken in any one subject.

Mathematics:
- Algebra: 3 hours, one semester.
- Trigonometry: 3 hours, one semester.

These studies are repeated each semester.

Science:
- Biology: 5 hours.
- Chemistry: 5 hours.
- Physics: 5 hours.
- Astronomy: 3 hours, one semester.
- Physiography of the United States: 3 hours, one semester.
- Physical Geography: 3 hours, one semester.

History:
- Ancient History: 3 hours.
- English History: 2 or 3 hours.
- Medieval History: 3 hours.
- American History: 3 hours.

The student may take 14, 15, or 16 hours from these studies. The combination may be made by adding to English (3 hours) two

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foreign languages from Group I (6 to 10 hours), with one subject from Group II (3 to 5 hours); or by taking but one foreign language (3 to 5 hours) with two subjects from Group II (6 to 10 hours). Students are advised to carry on the language, or languages, which they have had in preparatory school. Those who come with a language preparation consisting only of two years of German will be expected to continue that subject during the freshman year.

The following courses which are open to freshmen will be found described under Departments of Study on the following pages. The figures following the name of the department refer to the number of the course as given under the proper heading under Departments of Study.

English 1, Greek A, Greek 1, Latin A, Latin 1 and 2, French 1 and 2, German 1, 2, 2a, Mathematics 1 and 2, History 1, 2a, 2b, 3, 5c, Biology 1, Chemistry 1, Physics 1, Astronomy 1. The last named course cannot constitute a part of the required science.

ELECTION OF STUDIES IN OTHER COLLEGES.

Candidates for the degree of Bachelor of Arts are allowed to elect in the College of Mechanics and Engineering, the College of Law, the College of Agriculture, the Course in Pharmacy, the Course in Commerce, the Course in Music, or the Course in Home Economics, certain studies enumerated below to an amount not to exceed the equivalent of twenty unit-hours. This privilege will not be extended to Normal graduates attempting to graduate in two years, nor to undergraduates of other colleges who enter this University with the rank of seniors.

When approved by the Dean of the College of Engineering, an additional election of six hours is permitted in the case of students who propose to proceed to the degree of Bachelor of Science, Civil Engineering.

In the application of the twenty-hour rule, above set forth, candidates for the degree of Bachelor of Arts, with the exception of seniors taking law studies, are not allowed to elect more than five of the twenty hours in any one semester. Studies in the College of Law may be elected only by juniors and seniors.

The following studies may be elected:

In the College of Engineering:

Mechanical Drawing, courses 1, 2, and 3.
Applied Mechanics, 1, 2, 3, 4, and 5.

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The Materials of Construction, 1, 2, and 3.
Topographic and Geodetic Engineering, 1, 2, 3, 4, 5, and 6; also 9 and 10.
Railway Engineering, 5.
Hydraulic Engineering, 1 and 3.
Structural Engineering, 1, 2, and 5.
Municipal and Sanitary Engineering, 1, 2, and 4.
Steam Engineering, 3, 4, and 5.
Mechanical Laboratory, 1 and 2.
Machine Design, 1, 3, 4, and 8.
Applied Electromagnetism and the Construction of Dynamos, 1 and 2.
Alternating Currents and Alternating-current Machinery, 1, 2, 3, 4, 5, and 6.
Applied Electrochemistry and Electrometallurgy, 1, 2, 3, and 5.
Electric Installations, 4 and 10.

In the College of Law:

Contracts.
Commercial Paper.
Real Property.
Torts.
Private Corporations.
Constitutional Law.
Wills.
Banking.
Domestic Relations.
Common Law Pleading.
Equity.
Evidence.
Agency.
Public Service Companies.

The law courses in italics may be taken only after suitable preliminary studies. Applications for these advanced studies must be made to the committee in charge, consisting of the Dean of the College of Law and Professor Reinsch.

In the College of Agriculture:

Agricultural Chemistry, 1 and 3.
Agricultural Physics, 1 and 3.
Horticulture, 1.

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In the Course in Commerce:

All courses except the one in business administration, which can only be taken in addition to the required 120 units, by students of suitable preparation.

In the Course in Pharmacy:

All courses except pharmacognosy under botany and the courses in the department of pharmacy.

In the Course in Music:

Courses 2 to 8, inclusive.

In the Course in Home Economics:

Courses 1 and 3.

REQUIREMENTS FOR A DEGREE IN THE COURSE IN COMMERCE.

Students who have completed the regular four years' course of the Course in Commerce described on p. 171, will receive the degree of Bachelor of Arts.

REQUIREMENTS FOR THE DEGREE OF BACHELOR OF SCIENCE.

Students who have completed the regular four years' course of the Course in Pharmacy, described on p. 183, will receive the degree of *Bachelor of Science* (Pharmacy Course.)

REQUIREMENTS FOR THE DEGREE OF BACHELOR OF PHILOSOPHY.

Course for Normal School Graduates.

Graduates of the advanced courses of the Normal schools of the State are admitted to advanced standing in the College of Letters and Science on conditions which may be found on page 64 of this catalogue. The following special course for Normal graduates has been arranged, leading in two years to the degree of *Bachelor of Philosophy.* The course contains a minimum required amount of advanced studies in philosophy and education, with opportunity for further elections in those subjects. It requires also a continuous study of foreign language during the two years of the course. In other directions the student may elect his studies. It is expected that the Normal graduate will give especial atten-

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tion to fitting himself for teaching in one or two of the main lines of instruction, and the requirements and electives have been so arranged as to permit him to attain this end. He may devote himself especially to science, to literature, to history, or to any combination of these studies. He will be required, however, to make one of these lines of study his major work, and will not be permitted to elect a large number of short, scattered courses of instruction, since it is the especial design of this course to enlarge and complete his knowledge in certain definite directions.

The attention of the student is called to the necessity of directing his work from the first to the preparation of a satisfactory graduation thesis. In most cases the thesis will probably be written on some topic suggested by education or philosophy. However, the student may arrange for his thesis in any other department, but in such case it will be necessary for him to plan his course from the beginning, so as to satisfy the requirements for a thesis.

Junior Year: Latin, French, or German 4; philosophy 3; advanced education 3; language, history, English, advanced mathematics, or science 5; electives 3 to 5: 18 hours per week required.

Senior Year: Continuation of Latin, French, or German 4; philosophy and advanced education 5; electives from language, science, history, economics, mathematics, or English 7; thesis 2: 18 hours per week required.

GRADUATION IN LESS THAN FOUR YEARS—SUMMER SESSION.

The attention of students is called to the announcement of the Summer Session of the University, as given on subsequent pages of the Catalogue. Work in the Summer Session will be credited in the same way as work in the regular session of the University, and by attendance at one session a total amount of credit may be acquired not exceeding six unit-hours.

Candidates for the degree of Bachelor of Arts who desire to graduate in three years may do so by taking 18 hours of recitations per week and by attending three summer sessions. Permission to take work to this amount will be given only to students whose standing in their studies is wholly satisfactory. No credit will be given for repetition in the Summer Session of studies taken in the regular session of the University, or for repeating in the University work done in the summer. Students will need to select carefully their work for the summer with reference to the required

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and elective studies of the course in which they intend to graduate. The Summer Session offers exceptional opportunities for the preparation of a senior thesis. Any student who expects to shorten his course by means of the Summer Session should consult his class adviser in selecting his studies.

STUDENT ADVISERS.

Upon entrance, each student in the College of Letters and Science is assigned to a member of the Faculty who acts as his adviser during the freshman and sophomore years. At the beginning of the junior year, at which time, if not before, the student selects his major study, a professor in the department in which his major is chosen becomes his adviser. Each semester, the student is required to consult his adviser concerning the choice of studies, and the adviser must give his approval before the student is permitted to enter classes.

DIPLOMAS AS STATE CERTIFICATES.

A law enacted by the legislature of 1901 states:

"A diploma granted upon the completion of a regular collegiate course of the University of Wisconsin, if accompanied by a certificate that the bearer has completed the course of pedagogical instruction prescribed by the University for all persons who intend to teach, * * * upon presentation to the State Superintendent shall entitle the holder to receive from that officer a certificate which shall authorize him to teach in any public school for one year.

Sections 458 *b* and *d* of the Revised Statutes provide that after one year of successful teaching the diploma of a graduate of the University may be countersigned by the State Superintendent, and that when so countersigned the diploma shall have the force and effect given by law to the unlimited state certificate.

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DEPARTMENTS OF INSTRUCTION.

PHILOSOPHY.

PROFESSOR STEARNS,* PROFESSOR JASTROW, ASSISTANT PROFESSOR SHARP, AND DR. BODE.

The student may begin his work in philosophy with any one of the introductory courses. The requirements for an undergraduate major in philosophy are a minimum of twenty semester hours, including the thesis. Of these, at least eight hours must be taken from the courses for undergraduates and graduates.

Primarily for Undergraduates.

1. General Psychology. Lectures based on James' *Outlines of Psychology. First semester; Tu., Th., at* 8; *F., at hours to be assigned.* Assistant Professor SHARP and Dr. BODE.
3. Introduction to Psychology. James' *Outlines of Psychology,* lectures and readings. *First semester; Tu., Th., at* 9, *and at one other hour to be arranged.* Professor JASTROW.
11. Elementary Logic. *Second semester; M., W., F., at* 11. Dr. BODE.
12. Applied Logic. Exercises in argumentation and in the analysis of argumentative prose and scientific reasoning. Course 11 is not required as a preliminary. *First semester; M., W., F., at* 11. Dr. BODE.
21. History of Greek Philosophy. *First semester; M., W., F., at* 8. Professor STEARNS.
23. Introduction to Philosophy. *Second semester; M., W., F., at* 8. Professor STEARNS.
31. Elementary Ethics. *Second semester; Tu., Th., at* 8; *F., at an hour to be determined.* Assistant Professor SHARP.
32. Social and Political Ethics. A study of moral rights: the rights of personal liberty, freedom of contract, property, conquest, national independence, and suffrage. Course 31 is not required as a preliminary. *First semester; Tu., Th., at* 12. Assistant Professor SHARP.

*Resigned Jan. 1st, 1904.

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36a. Aesthetics. Philosophy of art and art criticism. *First semester; Tu., Th., at* 8. Professor STEARNS.

36b. Aesthetics. History of art. *Second semester; Tu., Th., at* 8. Professor STEARNS.

For Undergraduates and Graduates.

2. Advanced Analytic Psychology. *Second semester; Tu., Th., at* 9. Assistant Professor SHARP.

4. Experimental Psychology. (a) Lectures and demonstrations in experimental psychology. *Second semester; M., W., F., at* 9. (b) Laboratory practice course, parallel with the lectures. The hours for laboratory work will be arranged on consultation; (a) and (b) together count as a full study. *Second semester; four hours a week.* Professor JASTROW.

5. Research in Psychology. *Throughout the year; hours to be arranged.* Professor JASTROW.

6. Comparative Psychology. Lectures and assigned readings on animal psychology and mental development in man. *First semester; Tu., Th., at* 10. Professor JASTROW.

7. Abnormal Psychology. Lectures and assigned readings covering the main forms of unusual and abnormal mental phenomena. *Second semester; Tu., Th., at* 9. Professor JASTROW.

8. Anthropology. Lectures and readings. Tylor's *Anthropology. First semester; Tu., Th., at* 10. Professor JASTROW.

22. History of Modern Philosophy. *Second semester; M., W., F., at* 10. Dr. BODE.

25. The Theory of Evolution in its relation to the problems of philosophy. *Second semester; Tu., Th., at* 11. Dr. BODE.

26. The Theory of Knowledge. A study of the nature and extent of human knowledge. Locke, *Essay on the Human Understanding;* Berkeley, *Principles of Human Knowledge;* Hume, *Treatise of Human Nature,* Book 1. *First semester; three times a week.* Dr. BODE.

27. The Theory of Knowledge. Kant, *Critique of Pure Reason. Second semester; three times a week.* Dr. BODE.

33. Advanced Ethics. The evolution of the moral life. *First semester; twice a week.* Assistant Professor SHARP.

34. Advanced Ethics. The growth of moral ideas among the ancient Hebrews, Greeks, and Romans. *Second semester, twice a week.* Assistant Professor SHARP.

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Primarily for Graduates.

10. Psychological Seminary. *Throughout the year; alternate weeks.*

28. Lotze's Metaphysics. *First semester; twice a week.* Assistant Professor SHARP.

29. Contemporary Theories of Metaphysics. *Second semester; twice a week.* Assistant Professor SHARP.

30. Metaphysical Seminary. *Throughout the year; alternate weeks; W.*, 4 *to* 6.

35. Ethical Seminary. *Throughout the year; alternate weeks; W.*, 4 *to* 6.

EDUCATION.

PROFESSOR STEARNS,* PROFESSOR O'SHEA, ASSISTANT PROFESSOR TRESSLER, AND DR. BODE.

For Undergraduates and Graduates.

1. History of Educational Theories and Institutions, Greek, Roman, and Modern. Lectures, reading, and essays. *First semester; M., W., F., at* 9. Profesror STEARNS.

2. Modern Educational Systems. A comparative study of education in England, France, and Germany. For graduate students. *First semester; twice a week, at* 9. Professor STEARNS.

3. The Herbartian Pedagogy. Herbart's *Science of Education;* Rein's *Pedagogics;* Lang's *Apperception. Second semester; twice a week at* 9. Alternates with course 6. Professor STEARNS.

4. School Supervision. The making and administration of courses of study; examinations; promotions; inspections; the conduct of teachers' meetings; etc. *Second semester; two hours a week.* Assistant Professor TRESSLER.

5. The Philosophy of Education. Lectures, readings, and discussions on the nature, forms, and elements of education. *Second semester; M., W., at* 9. Dr. BODE.

6. History of the High School Branches. Readings and discussions. *Second semester; Tu., Th., at* 9. Alternates with course 3. Professor STEARNS.

*Resigned Jan. 1st, 1904.

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15. Modern Educational Movements. *First semester; M., W., at* 12. Professor O'SHEA.

16. Educational Classics. Readings, with critical discussion, from Plato, Aristotle, Plutarch, Quintilian, Rousseau, Locke, Mill, Pestalozzi, Froebel, Herbart, Spencer. *Second semester; M., W., at* 12. Professor O'SHEA.

11. Mental Development. The most important of the newer problems relating to the development in the individual, with educational interpretations. *First semester; M., W., F., at* 10. *Repeated in the second semester; M., W., F., at* 11. Professor O'SHEA.

13. Principles of Education, with special reference to methods of teaching and management in the high school. *First semester; M., W., F., at* 11. *Repeated in the second semester; M., W., F., at* 10. Professor O'SHEA.

14a. Genetic Psychology. A study of the genesis of intellectual faculty in the race and in the individual. *First semester; two hours a week.* Professor O'SHEA.

14b. Genetic Psychology. A study of the genesis of emotion in the race and in the individual, with special reference to the ethical and social emotions. *Second semester; two hours a week.* Professor O'SHEA.

17. The Play Instinct. A detailed study of the psychology and modes of manifestation of the play impulse in animals and in human life, with educational interpretations. *Second semester; hours to be arranged.* Professor O'SHEA.

18. Adolescence. A study of the intellectual and emotional developments in the individual during the adolescent period, with educational interpretations. *Second semester; hours to be arranged.* Professor O'SHEA.

20. Seminary, for the investigation and discussion of educational questions of current interest. Open to those only who have completed preliminary courses in education. *First semester; one hour a week.* Professor O'SHEA.

21. Seminary. Similar to course 20. *Second semester; one hour a week.* Professor O'SHEA.

Students desiring the University Teachers' Certificate must conform to the following requirements: Philosophy 1 or 3, and education 1 or 13, must be taken. The remaining four-fifths must be made up by electives from the following: Philosophy 6, 11; education, 4, 5, 11, 15, 16, 31; and the teachers' course in those

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subjects that the student is preparing to teach. These electives are subject to the following conditions: (a) The maximum number of credits allowed for the teachers' courses is two-fifths; (b) the maximum in philosophy is five-fifths, which includes the three-fifths required above.

HISTORY.

PROFESSOR TURNER, PROFESSOR MUNRO, PROFESSOR WOODBURN, ASSISTANT PROFESSOR COFFIN, ASSISTANT PROFESSOR FISH, DR. TILTON, DR. SELLERY, DR. PHILLIPS, AND ASSISTANTS.

Arrangement of Courses.

The courses in history are divided into three groups, as follows:

A. Undergraduate courses 1 to 9 are planned to afford a comprehensive survey of the general field of history. They cannot be counted toward advanced degrees, and graduates are required to have completed an equivalent of sixteen semester hours of these studies as a preparation for graduate work for a degree. It will be noted that a substantial historical basis can be laid for advanced work by such an election as the following: Freshman year, Medieval (course 1) and Colonial (course 3) or English (course 6); sophomore year, Modern (course 2) and United States (course 4). The study of Greek and Roman history (courses 8 and 9) is particularly recommended to those who may intend to teach history. It is not recommended that students shall cover all of the introductory courses to the neglect of advanced work.

B. Advanced courses 11 to 45 are designed to continue the subjects begun in the preliminary courses in the direction of greater specialization. These courses are open to undergraduates and graduates who have taken the necessary preliminary work.

C. Graduate courses 51 to 60 are not open to undergraduates. They consist of courses in the technique of history, and seminaries in American, Medieval, and Modern history, in which the subject of study changes from year to year.

History Major.

The requirements for an undergraduate major in history, in addition to the thesis, are twenty-six semester hours as a minimum, selected as follows:

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I. One or more introductory courses in both European and American history.

II. Advanced courses to the amount of at least ten semester hours.

Primarily for Undergraduates.

1. Medieval History. A general survey of the history of continental Europe from the barbarian invasions to the close of the fifteenth century. Advanced students will be given special quiz sections and more advanced work. *Throughout the year; M., W., at* 11 *for lectures, and a third hour in sections.* Professor MUNRO, Dr. TILTON, Dr. SELLERY, and assistants.

2. Modern European History. A general survey extending from the close of the fifteenth century to the present day. Not open to freshmen. *Throughout the year; Tu., Th., at* 11, *and a third hour in sections. First semester,* Dr. SELLERY; *second semester,* Assistant Professor COFFIN.

3. American Colonial and Revolutionary History. An introduction to the history of the United States designed to acquaint the student with the beginnings of American institutions. Text book, lectures, and topics. The class meets in divisions. *Throughout the year; Tu., Th., at* 9 *and* 10. Assistant Professor FISH and Dr. PHILLIPS.

4. History of the United States. A general survey from the Revolutionary era to the present, with emphasis upon political history. Lectures, text-book, collateral reading, and topics. Not open to first-year students. This course, or an equivalent, must precede all advanced courses in American history.

4a. To the Presidency of Jackson. *First semester; M., W., F., at* 11. Assistant Professor FISH.

4b. From the Presidency of Jackson to the Present. *Second semester; M., W., F., at* 11. Assistant Professor FISH.

5. English History. A general survey, with especial reference to economic and social conditions. Text-book, lectures, and topics. *Throughout the year; M., W., F., at* 9 *and* 11. Dr. TILTON and Dr. SELLERY.

6. English history. A course with especial reference to social and political conditions, useful for students of English literature, and recommended to those who expect to teach

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history. Students are not permitted to elect both courses 5 and 6. *Throughout the year; Tu., Th., at* 9. Assistant Professor COFFIN, Dr. TILTON, Dr. SELLERY, and Dr. PHILLIPS.

7. History of Europe in the Nineteenth Century, 1815 to 1900. Designed for freshmen in the Course in Commerce. *Throughout the year; M., W., at* 11, *for lectures; a third hour in sections.* Assistant Professor COFFIN.

8. Ancient and Greek History. A brief outline of primitive and Oriental history and a general course in Greek history. Recommended to all who expect to teach history. *First semester; Tu., Th., at* 11, *for lectures; a third hour in sections.* (Omitted in 1904-05,) Professor MUNRO, and Dr. TILTON.

9. Roman History. A general survey, with especial emphasis on the period of the later Republic and Early Empire. Recommended to all who expect to teach history. *Second semester; Tu., Th., F., at* 11. (Omitted in 1904-05.) Professor MUNRO and assistants.

For Undergraduates and Graduates.

11. History of the West. Particular attention is paid to the conditions of westward migration and to the economic, political, and social aspects of the occupation of the various physiographic provinces of the United States, together with the results upon national development. Lectures, collateral reading, and topics. *Throughout the year; M., W., F., at* 12. Professor TURNER.

12. History of the South. The course deals with the period since the Revolution and especial attention is given to the economic and social forces involved in the plantation system, slavery, and the occupation of the Gulf Plains, as a basis for understanding the political history of the South and its place in national history. *Throughout the year; Tu., Th., at* 3. Dr. PHILLIPS.

13. History of New England. Special attention will be paid to the colonial period, and to New England expansion. *Second semester; M., W., F., at* 2. (Omitted in 1904-05.) Assistant Professor FISH.

14. Economic and Social History of the United States. Designed

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to treat economic topics in relation to the general movement of national history. *Throughout the year; M., W., F., at* 12. (Omitted in 1904-05.) Professor TURNER.

15. Diplomatic History of the United States. An historical survey of our foreign relations from the Revolution to the present time. *Throughout the year; Tu., Th., at* 10. Professor WOODBURN and Assistant Professor FISH.*

16. Constitutional and Political History of the United States from the Confederation to the Presidency of Jefferson. *First semester; M., W., at* 2:15. (Omitted in 1904-05.) Professor WOODBURN.

17. Undergraduate Seminary in American History. Designed to train undergraduates in the use of sources, by studying different problems in different years. The period since the Civil war will probably furnish the field for 1904-05. Elective by semesters to students who have had course 4 or its equivalent. *M., W., at* 2:15. Assistant Professor FISH.

29. Roman Imperial Institutions. A study of the organization and government of the Empire, especially in the second century A. D. *First semester; Tu., Th., at* 10. (Omitted in 1904-05.) Professor MUNRO.

31. Medieval Civilization. Designed to supplement course 1 by a more special study of the social and intellectual life of the Middle Ages. *First semester; Tu., Th., at* 10. Professor MUNRO.

32. Feudal Institutions. *Tu., Th., at* 10. Open to graduate students and seniors of suitable preparation. (Omitted in 1904-05.) Professor MUNRO.

33. Constitutional History of the Middle Ages. A comparative study of the governments in Germany and France, especially during the twelfth and thirteenth centuries. Open to graduate students and seniors of suitable preparation. *Second semester; Tu., Th., at* 10. Professor MUNRO.

35. Period of the Renaissance. An investigation of the chief political problems in the epoch of the foundation of the great European states, 1300 to 1500. Open to juniors and seniors who have had course 1 or an equivalent. *First semester; Tu., Th., at* 11. Dr. SELLERY.

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*To be given in 1904-05 by Assistant Professor Fish.

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36. Age of Louis XIV. A study of the development of the absolute monarchy in continental Europe. Open to juniors and seniors who have had course 1 or 2, or an equivalent. *Second semester; Tu., Th., at* 11. Dr. SELLERY.

38. The French Revolutionary and Napoleonic Periods, 1789 to 1814. Open to those who have had course 2 or its equivalent. *Throughout the year; M., W., F., at* 10. (Omitted in 1904-05.) Assistant Professor COFFIN.

39. History of Europe in the Nineteenth Century, 1815 to 1900. Open to those who have had course 2 or its equivalent. The work will be devoted especially to tracing in this period the influence of the French revolutionary ideas in the development of social and political institutions. *First semester; M., W., F., at* 10. Assistant Professor COFFIN.

41. Constitutional History of England. A study of the growth of English institutions. *Throughout the year; Tu., Th., at* 12. Open to juniors and seniors who have had course 5 or 6. *First semester*, Dr. TILTON; *second semester*, Assistant Professor COFFIN.

42. Economic and Social History of England from 1300 to 1600. A summary of English civilization in the thirteenth century, and a view of the chief economic and intellectual changes from medieval to modern civilization. Open only to students who have had course 1, 5, or 6. *Second semester; M., W., at* 12. Dr. TILTON.

45. The Development of Modern Prussia, 1640 to 1871. This course is intended to explain the development of the Prussian state and trace the Prussianizing of modern Germany. Open to those who have had course 2. *First semester; Tu., Th., at* 12. Assistant Professor COFFIN.

50. Methods of History Teaching, with special reference to the work of secondary schools. For graduates and seniors of suitable preparation. *Throughout the year; F., at* 3. Professors TURNER and MUNRO.

For Graduates.

51. Historical Bibliography. An account of the present state of the materials for historical research, and an examination of the bibliographical tools most essential to the especial study of history. *First semester; W., at* 10. (Omitted in 1904-05.) Professor MUNRO.

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52. Historical Criticism. An introductory survey of the principal problems of historical method, accompanied by practical exercises. *Second semester; W., at* 10. Given in alternate years. Professor MUNRO.

53. Palaeography and Diplomatics. (a) Elements of palaeography, with practical exercises in the reading of manuscript facsimiles; (b) Elementary exercises in diplomatics. The first part of the course is identical with the first part of course 18 in Latin, and is arranged for the benefit of advanced students of language, as well as for students of history. *Second semester; F.*, 9 *to* 11. Given in alternate years. Professor MUNRO.

56. Seminary in Medieval History. In 1904-05 the First Crusade will be studied by special topics, illustrating the causes, the relations of the chiefs with the Greek emperor, and the social conditions in the Latin kingdom of Jerusalem. *Th.*, 4 *to* 6. Professor MUNRO.

57. Seminary in Modern European History. The work will center about the diplomatic revolution of 1756. *Throughout the year; S.*, 11 *to* 1. Assistant Professor COFFIN.

58. Seminary in American History. For 1903-04 and 1904-05 the seminary will study the history of Monroe's administration. *Throughout the year; three hours a week, in two sessions.* Professor TURNER.

60. Historical Conference. A fortnightly meeting of the instructors and graduate students in history for conference and consideration of papers. A considerable portion of the time of the conference is devoted to a co-operative study of the work of important historians, so planned as to give in successive years a general view of modern historiography. *Throughout the year; alternate Fridays*, 4 *to* 6.

SPECIAL LECTURES.

Besides the regular courses of class instruction described above, two series of lectures are given each year by scholars from without the University. In 1903-04 the following were delivered:

Transcontinental Explorations, with special reference to Lewis and Clark. Four lectures by Reuben Gold Thwaites, Secretary of the State Historical Society of Wisconsin.

The Causes of the Civil War. Four lectures by Professor James A. Woodburn of Indiana University.

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SUMMER COURSES.

Elementary and advanced courses in history are offered each year in the Summer Session of the University. For a fuller description see the Summer Session circular.

POLITICAL ECONOMY.

PROFESSOR ELY, PROFESSOR SCOTT, PROFESSOR MEYER, PROFESSOR COMMONS, ASSISTANT PROFESSOR ADAMS, ASSISTANT PROFESSOR BURCHELL, DR. BRAUER, MR. DOWD, MR. LORENZ, AND DR. TAYLOR, SPECIAL LECTURERS, PROFESSOR FRANK W. BLACKMAR, MR. ROBERT HUNTER, AND DR. VICTOR ROSEWATER.

General Statement.

The purpose of the department is to afford superior means for systematic and thorough study in economics and social science. The courses are graded and arranged so as to meet the wants of students in the various stages of their progress, beginning with elementary and proceeding to the most advanced work. They are also designed to meet the needs of different classes of students; as, for instance, those who intend to enter the public service, business, the professions of law, journalism, the ministry, or teaching, and those who wish to supplement their legal, theological, or other professional studies with courses in economics or social science. Capable students are encouraged to undertake original investigations, and assistance is given them in the prosecution of such work through seminaries and the personal guidance of instructors. A large fund has been placed at the disposal of the senior professor of the department to defray the expenses of an exhaustive investigation of the history of labor and allied movements in the United States, and special attention will be given to this field of research for several years. A means for the publication of the results of investigations of merit and importance is provided in the University bulletins.

The studies offered by the department are elective in all the courses of the University. The graduate work of the department may lead to the master's degree in not less than one year, and to the doctor's degree in not less than three years.

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The work of this department has the following distinct but related aims:

1. To provide instruction in economics and sociology for undergraduates in all the courses of the University.

2. To provide advanced and graduate work in the studies falling within its field.

3. To assist and encourage the development of these studies.

4. With the co-operation of other departments, to provide special training courses for various practical pursuits.

5. To supplement the work of the College of Law.

Special attention is here called to the fact that graduates who are pursuing the law course may prepare to take their master's degree at the same time with the degree in law by completing the equivalent of two full studies during one year's work. Graduates of the College of Law are encouraged to devote an additional year to broadening out their training in economics, politics, and jurisprudence.

Especial attention is called to the large number of related courses in philosophy and ethics, and also to the considerable number of journalistic courses in the department of rhetoric and oratory.

POLITICAL ECONOMY AS AN UNDERGRADUATE MAJOR.—The requirements for an undergraduate major in addition to the thesis are twenty-one semester hours as a minimum, selected in part from the introductory courses, and in part from the advanced courses.

Candidates for the degree of Doctor of Philosophy in this department are required to present in their principal subject the equivalent of at least two full graduate courses during two years; in their first subordinate the equivalent of at least one such course during two years; and in their second subordinate the equivalent of at least one such course during one year.

Candidates for the master's degree must present in their principal subject the equivalent of at least two full graduate courses during one year; and in their subordinate subject the equivalent of at least one such course.

OUTLINE OF COURSES.

Primarily for Undergraduates.

1. The Elements of Economic Science. A general survey based upon the study and discussion of a text-book, supplemented

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by lectures, assigned reading, and exercises. Required of sophomores in the Course in Commerce and of all students beginning the subject of economics. *Repeated each semester; M., W., F., at* 8, 9, *and* 10. Mr. LORENZ.

2. The Elements of Sociology. A study of primitive man, followed by an investigation of the phenomena of civilized societies, leading up to a statement of the general principles of social evolution. *First semester; M., W., F., at* 10. Mr. DOWD.
3. Elements of Public Finance. An introductory study of the general principles of public expenditure, public revenue, public indebtedness, and financial administration. *First semester; M., W., F., at* 9. Assistant Professor ADAMS.
4. Agricultural Economics. This course is designed for short-course students in the College of Agriculture. Twelve lectures. *December and January; Tu., Th., at* 11. Dr. TAYLOR.
5. The Elements of Money and Banking. An introductory course, repeated each semester. In the first semester the course will be adapted to the needs of those who expect to continue the subject. In the second semester the needs of those who do not expect to specialize in banking and finance will be chiefly consulted. *First semester; M., W., F., at* 8; *second semester, at* 9. Professor SCOTT.
6. The Economic Functions of the State. This course has special reference to pharmacy. *One lecture a week; first semester.* Professor MEYER.
7. Economic Geography. A general survey of the resources, industries, and commerce of the chief countries of the world, followed by a special study of the production and distribution of the staple articles of commerce, with special reference to the foreign trade of the United States. *Throughout the year; M., W., F., at* 8 *and* 9. Dr. TAYLOR.
8. Business Administration. In this course students are given thorough instruction in bookkeeping, accounting, auditing, and the various other branches of business administration. The work is graded and arranged in three groups, adapted respectively to the attainments of sophomores, juniors, and seniors. In each group a careful study is made of office equipment, business relations, and administrative duties by means of lectures, text-books, and outside reading in trade journals, and this is followed by laboratory prac-

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tice, each student being appointed to various positions and promoted through the various branches of administrative work in merchandising, manufacturing, banking, and transportation.

8a. Sophomore Year. The work of this year centers in business forms and correspondence, bookkeeping, and clerical duties.

8b. Junior Year. The special feature of the work of this year is the study of legal forms, credit instruments, funding operations, accounting, and executive duties.

8c. Senior Year. During this year emphasis is placed upon the work of supervision and auditing, especially in connection with passenger transportation, light and power companies, savings institutions, insurance, jobbing, the commission business, brokerage, importing, and exporting. *Throughout three years; two hours per week.* Assistant Professor BURCHELL.

9. Commercial Law. The law of contracts, commercial paper, agency partnership, corporations, sales, bailments, and insurance; treated from the point of view of the business man rather than the lawyer. *Three times a week throughout the year.* Dr. BRAUER.

18. Senior Seminaries for Thesis Students. Professor MEYER, Professor SCOTT, Assistant Professor ADAMS, and Dr. TAYLOR.

For Undergraduates and Graduates.

20. Industrial Evolution and Its Problems. A general survey of industrial development, followed by an examination of special problems, such as competition, monopolies, and trusts, concentration of wealth, municipal ownership, the inheritance of property, etc. *First semester; Tu., Th., at* 10. Professor ELY.

21. History of Economic Thought. The principal topics will be the following: The history of economic thought in classic antiquity; its subsequent development to the time of the mercantilists; the rise and growth of economics as a distinct branch of social science, with a brief discussion of existing schools of economic thought. *Second semester, Tu., Th., at* 10. Professor ELY.

22. Modern Socialism. A study of the socialist movement during the nineteenth century, and an examination of the theories of those writers who are usually called socialists. *First semester; Tu., Th., at* 9. Mr. LORENZ.

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23. Economic Problems. This course is devoted principally to the important labor problems of the day: strikes, trade-unions, employers' associations, arbitration, immigration, child labor, etc. *Second semester; M., W., F., at* 9. Assistant Professor ADAMS.

24. Problems in Taxation. Comprehends the more concrete problems of the day: mortgage, railroad, insurance, and double taxation, the personal property and inheritance taxes, etc. May be taken by those who have not had course 3. *Second semester; M., W., F., at* 10. Assistant Professor ADAMS.

25. Labor Legislation. Comprehends a study of the labor law of the United States and foreign countries, the practical working of important statutes, and the sphere and function of the labor law in general. *First semester; M., W., F., at* 10. Assistant Professor ADAMS.

26. The Elements of Agricultural Economics. This course treats of the economic principles which underlie the prosperity of the farmer, and of all other classes so far as they are dependent upon agriculture. The subject is divided into two parts: In Part I the point of view is that of the farmer, and in Part II that of the nation as a whole. *Firse semester; Tu., Th., at* 12. Dr. TAYLOR.

27. Historical and Comparative Agriculture. This course consists of lectures and assigned readings on the agriculture of the Romans, on the development of agriculture in England and the United States, and on the present status of agriculture in the most important countries, with an attempt to find the explanation of historical changes and geographical differences. *Second semester; Tu., Th., at* 12. Dr. TAYLOR.

28. Agricultural Industries. An investigative course for seniors in the commercial and agricultural courses and for other advanced students. *Second semester.* Dr. TAYLOR.

29. Manufacturing Industries. An investigative course for seniors in the Course in Commerce, and for other advanced students. *First semester.* Dr. TAYLOR.

30. Social Statistics. Includes a study of vital statistics, suicide, crime, pauperism, etc. In this and the following course the laboratory method is followed. Students are required to do a thorough piece of statistical investigation under the immediate guidance of an instructor. This course is spe-

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cially recommended to students taking thesis work in economics. Two lectures and two hours' laboratory work a week, for which a credit of three-fifths is given. *First semester; Tu., Th., at* 12 *and M., from* 2 *to* 4. Assistant Professor ADAMS and Mr. LORENZ.

31. Economic Statistics. Prices, wages, family budgets, labor and financial statistics will be studied. *Second semester; Tu., Th., at* 12; *M.,* 2 *to* 4. Assistant Professor ADAMS and Mr. LORENZ.

32. Government Statistics. A course on public statistical bureaus: their organization, methods, and publications. *Second semester; Tu., Th., at* 11. Assistant Professor ADAMS.

33. Currency History. A systematic presentation of the currency of England, France, Germany, and the United States. Special attention will be given to the history of bimetallism, to the development of the banking systems of these countries, and to the chief monetary problems which have arisen in these nations and the methods which have been employed in their solution. An elementary knowledge of money and banking is needed in preparation for this course. *Second semester; M., W., F., at* 8. Professor SCOTT.

34. Corporation Finance and Securities. A study of the methods of financiering employed in great corporations, with special reference to the various sorts of negotiable securities which they issue, and the circumstances which affect their value. The course includes a study of the stock and produce exchanges, and of their relations to the business of banking. Open to students who have had Money and Banking. Lectures and assigned reading. *First semester; Tu., Th., at* 12. Professor MEYER.

35. Transportation and Communication. This is a general introductory course dealing with the most important principles and facts relating to railways, waterways and the express, telephone, telegraph, and postoffice services. *Repeated each semester; M., W., F., at* 9. Professor MEYER.

36. Special Problems in Transportation. This is an advanced ocurse in which the more important special transportation problems are discussed in detail. Each student pursues an independent line of investigation. Lectures and reports. Open to students who have had course 35 or its equivalent. *Second semester; Tu., Th., at* 9. Professor MEYER.

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37. Foreign Systems of Railways. This course embraces a study of the railways of the leading countries of the world, historically and economically. Each student may select the railways of a particular country or read systematically in connection with the lectures on railways in different countries. Open to students who have had course 35 or its equivalent. *Second semester; Tu., Th., at* 8. Professor MEYER.

38. Insurance. This course deals with the general principles of the different forms of personal and property insurance and the main problems connected with each. Lectures and reading. Open to students who have had the Elements of Economic Science. *First semester; Tu., Th., at* 11. Professor MEYER.

39. Modern Sociological Thought. A survey of sociological writers beginning with Bodin and including the principal writers down to Gumplowicz, Schæffle, Giddings, and Small. *First semester; M., W., F., at* 8. Mr. DOWD.

40. Charities and Corrections. This course embraces first, a study of the dependent class, with special reference to the slum conditions in London, New York, Chicago, and Philadelphia; second, the defective class and the institutional treatment of this class; third, the delinquent class, causes and prevention of crime, prison management and discipline. Reformatories and other public institutions will be visited. *First semester; M., W., F. at* 11. Mr. DOWD.

41. Public and Private Charity. A comparative study of poor relief in the United States, England, and the principal continental countries. *Second semester; M., W., F. at* 11. (Omitted in 1905.) Mr. DOWD.

42. Charity Organizations. A study of poverty in American cities with special reference to the work of charity organization societies. *Second semester; Tu., Th., at* 9. (Omitted in 1905.) Mr. DOWD.

43. Field Work. Students are encouraged to study charitable and correctional institutions in Madison and the vicinity, and opportunity is afforded for continuous work elsewhere during the summer months. During the past years students from the University have engaged in field work, and several of these students have taken up work of this kind as a career. It is believed that this method of continuous study, followed by field work, yields the best results. It is the aim

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of this department to furnish secretaries of charity organization societies, and other trained workers.

Primarily for Graduates.

50. Economic History. A study of the development of economic institutions and economic doctrines, and of their influence upon each other and upon other phases of social life. The period 1776 to 1850 will be studied in 1904-05. An investigative course for advanced students and graduates. *Two sessions weekly at hours to be arranged.* Credited as a full study. Professor SCOTT.

51. Modern Economic Theory. Designed to give students some acquaintance with recent movements in economic theory and practice in reading German texts. As a point of departure and contrast Schmoller's *Grundriss der Allgemeinen Volkswirtschaftslehre* will be used as a text. *Second semester; Tu., Th., at* 9. Assistant Professor ADAMS.

52. The Distribution of Wealth. Part I. This course deals chiefly with the fundamental institutions in the existing social order and their relation to the present distribution of wealth. The principal topics discussed are: private property, contract and its conditions, vested interests, custom, competition, monopoly, authority, and the caritative principle. *First semester; Tu., W., Th.,* 2:30 *to* 4:00. Professor ELY.

53. Distribution of Wealth. Part II. This course deals with the shares of the various factors in distribution, viz.: rent, interests, profits, and wages. May be taken by those who have not had Part I, course 52. *First semester; Tu., W., Th.,* 2:30 *to* 4:00. (Omitted in 1904-05.) Professor ELY.

54. Public Finance. This course deals first with the nature of public finance as a science and with its history, with the development and working of the public economy, and then proceeds to a discussion of public expenditures and a brief examination of public revenues. *Second semester; Tu., Th.,* 2:30 *to* 4:00. (Omitted in 1904-05). Professor ELY.

55. American Public Finance. Part I. The financial history of the United States. A critical and historical discussion of the finances of the federal government. *Second semester; Tu., Th.,* 2:30 *to* 4:00. Professor ELY.

56. American Public Finance. Part II. An historical and critical account of the finances of the American commonwealths

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and local political units. *Second semester; Tu., Th.*, 2:30 *to* 4:00. (Omitted in 1904-05). Professor ELY.

57. The Theory of Taxation. This course covers the general theoretical problems of taxation, equality and uniformity, shifting and incidence, etc. *First semester; Tu., Th., at* 10. Assistant Professor ADAMS.

58. Monopolies and Trusts. This course deals with the theories of monopoly, historically and critically, and examines the tendencies of large-scale business with reference to competition and monopoly. (Omitted in 1904-05). Professor ELY.

59. Principles of Transportation. This is a lecture course assigned exclusively for graduate students who do not desire to specialize in transportation. An endeavor will be made to present the most important facts and principles of railway development as illustrated in the leading countries of the world. *Second semester; two-fifths.* (Omitted in 1904-05). Professor MEYER.

60. The Psychological Sociologists. This course deals with that group of sociologists who approach sociology from a psychological point of view. *First semester; Tu., Th., at* 8. (Omitted in 1904-05). Mr. DOWD.

61. Seminary in Sociology. Topics in theoretical and practical sociology selected with reference to the needs and interests of the students will be investigated. *Two hours.* Mr. DOWD.

62. Race Elements in American Industry. The unique feature of American industrial and labor problems is the variety of races in industries and localities, the competition of races, prepare a way for the proper understanding of labor history in the United States this course will include an examination of the industrial qualities of the several races, their capacities as producers, their part in promoting American industrial supremacy, their standards of living, the relative influence of climate, civilization and heredity on industrial capacities, the sources of immigration, the distribution of races in industries, and localities, the competition of races, the influence of industry and labor organizations in the assimilation of races, legislation regulating immigration, etc. The course will be divided into two parts: Part I consisting of lectures *three hours a week;* Part II consisting of reports and discussions; *two hours a week. M., Tu., W., Th., F., at* 8. *First semester.* Professor COMMONS.

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63. The History of Labor and Industrial Organization Prior to the Civil War. A survey of labor conditions in colonial times, the beginnings of labor agitations, the origins of labor unions, the communistic, sentimental and utopian programs and experiments, free labor and slavery, political and civil rights of wage-earners, the rise of manufactures and rapid transportation. This course is divided into two parts like the foregoing. *First semester; M., Tu., W., Th., F., at* 8. (1905-06). Professor COMMONS.

64. The History of Labor and Industrial Organization Since the Civil War. The effects of the Civil War on capital and labor, the rise of the Knights of Labor and the American Federation of Labor, the effects of machinery, inventions, division of labor and large-scale production, the changes in wages, hours of labor and working conditions, the policies of trade unions, the influence of socialism, radicalism and conservatism in labor unions, the beginnings of employers' associations, the concentration of capital, growth of arbitration and trade agreements and their practical results, labor legislation and judicial decisions, labor in public employment, women's and children's work and wages, etc. This course is divided into two parts like the foregoing. *First semester* (1906-07); *M., Tu., W., Th., F., at* 8. Professor COMMONS.

65. Research Course in Labor Problems. This is designed especially for students electing theses on these subjects. Special attention will be given to thesis work by way of personal and seminary conferences in which the student will be associated with the instructor in the special investigations of the labor history on which he is engaged. *First semester; F.*, 2:15 *to* 4:00. Professor COMMONS.

70. Economic Seminary. This is designed for graduate students who wish to carry on special investigations under the guidance which the department affords. A subordinate feature of the seminary work is the review of recent books and important articles published in the periodicals. *Throughout the year; Tu. evening*, 7:30 *to* 9:30. Professor ELY, Professor COMMONS, Professor MEYER, Assistant Professor ADAMS, Mr. DOWD, Mr. LORENZ, and Dr. TAYLOR.

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POLITICAL SCIENCE.

PROFESSOR PARKINSON, PROFESSOR REINSCH, ASSISTANT PROFESSOR SPARLING, AND MR. BARNETT.

Arrangement of Courses.

The undergraduate courses are open for election in the sophomore and junior years. As a rule, at least five semester hours of this work should be done before electing any of the advanced courses. The courses for undergraduates and graduates are open for election by juniors, seniors, and graduates. Sophomores of advanced standing may make arrangements to take some of these courses (courses 12, 15, and 20). The requirements for an undergraduate major in political science, in addition to the thesis, are twenty-one semester hours as a minimum.

Primarily for Undergraduates.

1. Elements of Political Science. A general survey of the field of political science. *First semester; M., W., F., at* 8. Assistant Professor SPARLING.
2. Elementary Law. The nature and sources of law, and the methods of its application. *First semester; Tu., Th., at* 8, *M., at* 3. Mr. BARNETT.
3. Elements of Administration. The theory of administration, and a survey of the administrative systems of the chief states of modern Europe and of the United States. *First semester; Tu., Th., at* 8. Assistant Professor SPARLING.
4. The Constitution of the United States. An outline course of lectures designed, primarily, for those who cannot give more time to this subject, but which may be taken with profit in connection with any of the longer courses in constitutional law. *Second semester; F., at* 10. Professor PARKINSON.

6. Administrative Problems. A survey of the primary administrative activities of the chief states of Europe and the United States. *Second semester; Tu., Th., at* 8. Assistant Professor SPARLING.
7. Government and Politics in the United States. A general study of the American system of government in its local, state and federal organs and their relations to each other, as well as of the methods of political action. *Second semester; M., W., F., at* 8. Professor REINSCH.

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For Undergraduates and Graduates.

9. Roman Law. a. History of the development of Roman Law from the Twelve Tables to the *Corpus Juris* of Justinian. b. Institutes of Roman Law. These divisions are given alternately. *First semester; M., W., at* 12. Professor REINSCH.
10. History of English and American Law. *Second semester; M., W., at* 12. (Omitted in 1905). Professor REINSCH.
11. Jurisprudence. Analysis of the main concepts of the science of law, on the basis of the juristic classics. Open to students who have had an elementary course in law. *Second semester; Tu., Th., at* 12. Mr. BARNETT.
12. Constitutional Law. A short course of lectures on the English constitution, followed by a study of the constitutional law of the United States. *Throughout the year; M., W., F., at* 9. Professor PARKINSON.
13. Constitutional Law. Designed to follow, or at least to supplement, course 12, with emphasis upon the study of cases; may be taken independently by those of suitable preparation. Open only to graduates and other advanced students. *Throughout the year; Tu., Th., at* 9. Professor PARKINSON.
14. Seminary in Constitutional Law. A comparative study of the essential features of the leading constitutions of the world. Open to graduates, and to seniors who have had courses 12 and 13 or their equivalent. *Second semester; M., W., at* 10. Professor PARKINSON.
15. Municipal Government in Europe and the United States. *Second semester; M., W., F., at* 8. Assistant Professor SPARLING.
16. State Administration. A study of the local and state administrative systems of the United States. *First semester; Tu., Th., at* 9. Assistant Professor SPARLING.
17. American Administrative Law. This course has in view the needs of the legal profession. *Second semester; T., Th., at* 11. Assistant Professor SPARLING.
18. International Law. Lectures, with supplemental reading. *First semester; M., W., F., at* 10. Professor PARKINSON.
19. Seminary in International Law. Emphasis will be placed upon diplomatic relations, treaties, the rights and obligations of neutrals, and the methods of settling international disputes without resort to war. Open to graduates, and also to

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others who have had course 18. *Second semester; M., W., at* 10. (Omitted in 1905.) Professor PARKINSON.

20. Contemporary International Politics. In 1905, the oriental situation will be the special subject of this course. *Second semester; M., W., F., at* 10. In connection with this course a series of public lectures on problems of international politics will be given. Professor REINSCH.

21. Colonial Politics. A study of the principal systems of colonial government. *First semester; M., W., F., at* 10. Professor REINSCH.

22. Party Government. Special attention will be given to party organization and the methods of legislative bodies. *First semester; Tu., Th., at* 11. Assistant Professor SPARLING.

23. Federal Administration. A study of the organization and functions of the different branches of our federal service. *Second semester; Tu., Th., at* 9. Assistant Professor SPARLING.

25. The Law of the Press. The law of copyright, literary property, libel, privileged publications, and other topics relating to the publication of books and newspapers. Designed especially for students preparing for journalism and the law. *Second semester; M., at* 3. (Omitted in 1905). Professor REINSCH.

Primarily for Graduates.

35. History of Political Thought. The development of political philosophy from the Greeks to the present time, and its connection with political history. May be taken by seniors of suitable preparation. *First semester; M., W., F., at* 11. Professor REINSCH.

36. Philosophy of the State. A critical study of contemporary political thought and terminology. *Second semester; M., W., at* 11. This course may be elected by seniors who take their major in political science. Professor REINSCH.

37. Juristic Classics. In 1906: The reading of *Gaius*, with commentaries. *Second semester; M., W., at* 11. Professor REINSCH.

39. Seminary in Administration. Some important phases of state administration will be studied. *Two hours throughout the year.* Assistant Professor SPARLING.

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40. Seminary in Politics. For 1904-05: Parliamentary institutions of the present time in Germany, France, and Italy. *Throughout the year; W.*, 7:30 *to* 9:30. Professor REINSCH.

For groups of studies in the departments of History, Political Economy, and Political Science, arranged as special training courses in practical sociology, statistics, public science, and journalism, see the special announcement of the above departments, which may be had upon application to the Registrar.

GREEK.

PROFESSOR SMITH, PROFESSOR KERR, ASSISTANT PROFESSOR LAIRD, AND MR. SMILEY.

A course in Elementary Greek is offered for the benefit of students who have not taken the preparatory work in the high school. It is open to all freshmen, whatever group of studies they may have offered for admission, and may also be taken in any other year, counting ten hours towards the fulfillment of the language requirement of sixteen or twenty-four hours, or as an elective in connection with any line of work. On completion of course A, a good student may, on the recommendation of the instructor, be admitted to course 1, thus gaining the opportunity of advancing more rapidly than if the second year were spent on course B. An exceptionally strong student, who has taken course A in his freshman year and desires then to make Greek his major, may in his sophomore year take courses 1 and 2, and thereby be enabled to carry on advanced work in his junior and senior years.

Primarily for Undergraduates.

A. Elementary Greek. White's *Beginner's Greek Book*, Xenophon's *Anabasis*. *Throughout the year; M., Tu., W., Th., F., at* 12. Assistant Professor LAIRD.

B. Xenophon's *Anabasis* III-IV, Homer's *Odyssey* I-IV, Greek Composition. *Throughout the year; M., W., F., at* 10. Mr. SMILEY.

For students who have had one year of preparatory work.

1. Herodotus VIII, Homer's *Odyssey* V-XII, Lysias, Grammar and Composition.* *Throughout the year; M., T., W., F., at* 8. Assistant Professor LAIRD.

For students who have had two years of preparatory work.

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2a. The *Philippics* of Demosthenes, the *Bacchae* of Euripides, Goodwin's *Moods and Tenses. First semester; M., W., F., at* 10. Professor KERR.

Plato's *Apology* and *Crito*, Thucydides VII., Jebb's *Primer of Greek Literature. Second semester; M., W., F., at* 10. Professor SMITH.

2b. Herodotus VII, or selected dialogues of Lucian, and Euripides, two plays. *Throughout the year; M., F., at* 11. Professor SMITH, and Professor KERR.

For those who have had course 1, or whose preparatory work has been particularly good.

3. Greek Prose Composition. *Once a week throughout the year.* Professor SMITH, or Assistant Professor LAIRD.

This course will be required of those who expect to get recommendations to teach.

4. Easy Greek for Sight Reading. Open to those who have completed course 1. *One hour a week.* Professor SMITH.

5. Greek Lyric Poets, study of meters. *First semester; M., W., F., at* 9. Professor SMITH.

Thucydides; Demosthenes. *Second semester; M., W., F., at* 9. Open to juniors and seniors. (Omitted in 1904-05.) Professor SMITH.

6. Greek Dramatic Poets. Aeschylus (two plays), Sophocles (two plays), study of meters. *First semester; M., W., F., at* 9. Professor SMITH.

Aristophanes (two plays), Aristotle's Poetics, discussion of the Greek drama. Open to juniors and seniors. *Second semester; M., W., F., at* 9. Professor SMITH.

7. Greek Orators. Open to juniors and seniors. *Tu., Th., at* 9. (Omitted in 1904-05.) Assistant Professor LAIRD.

8. Plato. The Republic. Books I, II, III, and X, with selections from other parts of the dialogue. This course is intended as an introduction to the study of Greek philosophy. Open to juniors and seniors. *Throughout the year; Tu., Th., at* 10. Professor KERR.

10. Advanced Greek Composition. Open to juniors, seniors, and graduates. *First semester; once a week.* Professor SMITH or Assistant Professor LAIRD.

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*In 1903-04 course 1 was divided into a three-hour course in Xenophon's Cyropaedia, Herodotus VIII., and Homer's Odyssey, and a two-hour course in Lysias and Greek composition.

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11. Modern Greek Language and Literature. A study of the changes in form and structure which the language has undergone since the classical period. Elective for juniors and seniors. *Throughout the year; Tu., Th., at* 10. Professor KERR.

14. Lectures on the life of the ancient Greeks and Romans, illustrated by lantern slides. Designed especially for students of history and literature; knowledge of Greek and Latin not required. *Throughout the year; Tu., Th., at* 9. *First semester*, Greek Life. (Omitted in 1904-05.) Assistant Professor SHOWERMAN.

15. Classical Archaeology. Lectures on the remains of ancient Greece and Rome, with especial reference to the history of classical art, illustrated by lantern slides. Designed primarily for students of the ancient classics and ancient history. *Throughout the year; Tu., Th., at* 9. *First semester*, Greek. Assistant Professor SHOWERMAN.

Primarily for Graduates.

The object of the graduate courses in Greek is to secure, on the part of advanced students, wide reading in Greek authors, acquaintance with the latest results of philological investigation through constant reading of critical journals, the forming of habits and learning of methods of research. In pursuance of the last named purpose especially, the Greek Seminary meets to hear and to discuss carefully prepared papers, the members leading in turn.

20. Thucydides. The whole of the author is read privately by the members of the class. *Throughout the year; S.,* 9 *to* 11. (Omitted in 1904-05.) Professor SMITH.

21. Greek Drama. Sophocles. The whole author is read privately by the members of the class. As supplementary to this course the scenic antiquities will be studied, Haigh's *Attic Theater* being used as a basis. *Throughout the year; S.,* 9 *to* 11. (Omitted in 1904-05.) Professor SMITH.

22. Lyric Poetry. Especial attention is given to Pindar, the whole being read privately. *Throughout the year, S.,* 9 *to* 11. (Omitted in 1904-05.) Professor SMITH.

23. Greek Dialects. A study of dialect sounds and forms based on the inscriptions. Cauer's *Delectus Inscriptionum Graecarum* will in the main be followed. *Two hours a week for*

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a portion of the year, as part of the regular seminary work. Assistant Professor LAIRD.

24. Greek Literature. Lectures, with selections from Greek authors, read by the class.

a. Lyric Poetry. *First semester; twice a week.* b. Drama and History. *Second semester; twice a week.* (Omitted in 1904-05.) Professor SMITH.

25. Greek Orators. Antiphon, Andocides, Lysias, and Isaeus. The whole of these authors will be read by the class. Courses 24 and 25, taken together, count as a full study. *Throughout the year; W.*, 4:30 *to* 6. (Omitted in 1904-05.) Assistant Professor LAIRD.

26. Herodotus. The whole of the author is read privately by the members of the class. *Throughout the year; W.*, 4 *to* 6. Assistant Professor LAIRD.

29. Journal Club. Reports on and discussion of current philological literature. *One hour a week throughout the year.* Professor SMITH and Assistant Professor LAIRD.

Courses 19 to 24 are conducted mainly on the seminary plan. Courses 19 to 25 are open to graduates, and, by special permission, to others who have had the junior three-hour elective or its equivalent.

30. Comparative Greek Grammar. (See Comparative Philology 3.)

COMPARATIVE PHILOLOGY.

1. Lectures on the principles of the life and growth of language. Open to juniors and seniors. A knowledge of Greek and Latin is not required. *Second semester; F.*, 9. Assistant Professor LAIRD.

2. Latin Grammar. History of the sounds and forms. *Second semester; Tu., Th., at* 11. (Omitted in 1904-05.) Assistant Professor LAIRD.

3. Greek Grammar. History of the sounds and forms. *Throughout the year; Tu., Th., at* 11. Assistant Professor LAIRD.

4. Elementary Sanskrit. *Throughout the year; M., W., at* 10. Assistant Professor LAIRD.

5. Advanced Sanskrit. Selections from the Rig-Veda. *Throughout the year; W., at* 11. Assistant Professor LAIRD.

(Courses 3 and 5 are intended primarily for graduates, but are open by permission, to juniors and seniors.)

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LATIN.

PROFESSOR SLAUGHTER,* PROFESSOR HENDRICKSON, ASSISTANT PROFESSOR FISKE, ASSISTANT PROFESSOR SHOWERMAN, DR. ALLEN, DR. PITMAN, AND MR. MOORE.

The Latin department offers the following elementary and advanced courses:

Course A is intended for students whose preparation has for any reason been less than the amount nominally required for entrance to the University. It counts towards a degree and is accepted in fulfillment of the language required in the University. It will not be accepted as part of a Latin major. Course 1 must precede all other courses except A. Course 2 is recommended to students who intend to make Latin a major, and should be taken in the first year along with course 1.

Primarily for Undergraduates.

A. Cicero and Vergil. Four orations of Cicero and six books of Vergil's Aeneid will be read in class. Some attention will be given to writing Latin. *Throughout the year; M., Tu., W., Th., F., at* 8. Mr. MOORE.

1. Livy, Cicero, and Terence. Livy, Books I and XXI; Cicero, *De Senectute*, and Terence, *Phormio* and *Andria* will be read. The class will meet in three sections. *Throughout the year; M., W., F., at* 8, 10, *and* 11. Assistant Professor FISKE will meet the section at 8, Assistant Professor SHOWERMAN at 10, and Dr. ALLEN at 11.
2. Prose Composition and the reading of easy prose authors. The translation from Latin requires no preparation, and is intended to supplement the work in writing Latin. *Throughout the year; Tu., Th., at* 8 *and* 10. Assistant Professor FISKE Assistant Professor SHOWERMAN, and Dr. PITMAN.
3. Horace and Cicero. Selections from the odes, satires, and epistles of Horace, and the letters of Cicero. Latin literature, lectures and readings, especially from prose writers. *Throughout the year; M., W., F., at* 9. Assistant Professor SHOWERMAN and Professor SLAUGHTER.

*On leave of absence for 1903-04.

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4. Advanced Prose Composition. This course must be preceded by course 2. *Throughout the year; Th. at* 3. Assistant Professor FISKE and Dr. PITMAN.

5. Catullus, Pliny, and Martial. This course is intended to supplement course 3, and should be taken with or after course 3. *Throughout the year; Tu., Th., at* 9. Dr. ALLEN.

For Undergraduates and Graduates.

6. Roman Satire from Ennius to Juvenal, with lectures on the origin and development of satire. *Throughout the year; Tu., Th., at* 10. Assistant Professor FISKE.

7. Tacitus and Caesar. Tacitus Annals I to VI and certain of the minor works constitute the work of the first semester. During the second semester selections will be read from the Gallic and Civil Wars of Caesar, and lectures will be given on subjects of special interest to teachers. *Throughout the year; M., W., F., at* 11. (Omitted in 1904-05.) Assistant Professor FISKE.

8a. Literature of the Late Empire. A reading course in pagan and Christian authors, with lectures on the religion, literature, and art of the period. The *Cupid* and *Psyche* of Apuleius, the *Octavius* of Minucius Felix, and selections from other authors will be read. *First semester; M., W., F., at* 8. Assistant Professor SHOWERMAN.

8b. Cicero's orations and letters, with special attention to the life and personality of Cicero. *Second semester; M., W., F., at* 8. Assistant Professor SHOWERMAN.

9. Plautus, Terence, and Seneca. This course is intended to give, by reading and supplementary lectures and topics, a general survey of the Roman drama. *Throughout the year; W., F., at* 8. (Omitted in 1904-05.) Assistant Professor SHOWERMAN.

10. Lucretius, Vergil, and the Roman Epic. *Throughout the year; M., W., F., at* 10. Professor SLAUGHTER.

11. Advanced Course in Latin Composition. Must be preceded by course 4. *Throughout the year; Tu., at* 3.

12. Life of the Greeks and Romans. Open to all students. A knowledge of Greek and Latin is not required. Illustrated lectures and topics. *Throughout the year; Tu., Th., at* 9. (Omitted in 1904-05.) Assistant Professor SHOWERMAN.

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13a. Roman Literary Criticism. Selections from Cicero, Horace, and Quintilian will be read. The course will be continued in the second semester by reading selections from the fragments of early Latin prose and verse. *Throughout the year; W., F., at* 9. Dr. ALLEN.

13b. Roman Philosophy. Selections from the philosophical works of Cicero and Seneca will be read. *Throughout the year; W., F., at* 9. (Omitted in 1904-05.) Dr. ALLEN.

Primarily for Graduates.

15. Religion of the Greeks and Romans. Lectures and topics. Open only to graduate students. *Throughout the year; twice a week.* Assistant Professor FISKE.

16. Classical Archæology. Lectures on the remains of ancient Greece and Rome, with special reference to the history of classical art, illustrated by lantern slides. Designed primarily for students of the ancient classics and ancient history. (See Greek, course 15.) *Throughout the year; Tu., Th., at* 9. Assistant Professor SHOWERMAN.

17. History of Roman Literature. Lectures and topics. Open only to graduate students. *Throughout the year; twice a week.* Dr. ALLEN.

18. Latin Epigraphy and Palaeography. Lectures. Reading of inscriptions and facsimiles of ancient manuscripts. *Once a week throughout the year.* Professor SLAUGHTER.

20. Latin Grammar. Lectures on the sounds and forms of the Latin language. Open to graduates and properly qualified seniors. *Second semester; twice a week.* Assistant Professor LAIRD.

21. Latin Syntax. Lectures on Latin syntax, illustrative of the historical method. *First semester; Tu., Th., at* 8. Professor SLAUGHTER.

22. Seminary. The seminary is intended for graduate students, but will be open to others of suitable preparation, with the consent of the director. To accommodate those who are studying for the doctor's degree, the work is arranged to cover three years; (a) Horace, critical and exegetical study of the odes; (b) the Roman drama. The critical work of the seminary will be based upon the *Miles Gloriosus* of Plautus; (c) Lucretius, Book III. *Throughout the year; Tu., Th., at* 9. Professor SLAUGHTER.

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23. Latin Seminary. Cicero's Brutus will form the basis of the work done in the seminary. This course is open only to graduate students. *Throughout the year; twice a week.* (Omitted in 1904-05.) Professor HENDRICKSON.

HEBREW AND HELLENISTIC GREEK.

PROFESSOR WILLIAMS, DR. KELLY, AND MR. KNIGHT.

The various language and literary courses given below are open as electives to students in any department of the University who are prepared to carry them on with profit. The purposes for which they are pursued are (a) as a means to liberal culture; (b) as furnishing necessary data to a study of phonetics, philosophy of language, and comparative philology; (c) as an important department of history, archaeology, and art; and (d) as preparatory to studies in ethics and theology.

HEBREW, ARABIC, AND ASSYRIAN.

Primarily for Undergraduates.

1. The General Principles of the Hebrew Language. Reading of selections from Genesis. *Four times a week throughout the year.* Dr. KELLY.
2. This course is the same as course 1, but begins in the second semester of each year as a two-fifths study, and continues as a two-fifths study during the first semester of the following year. Dr. KELLY.
3. Historical Hebrew. The books of Samuel, with a review of the verb. *Twice a week; first semester.* Dr. KELLY.
4. Deuteronomy and a general review of Etymology. *Twice a week; second semester.* Dr. KELLY.
5. Minor Prophets. Critical translation of the Hebrew text with close attention to vocabularies and syntax. *Twice a week throughout the year.* Dr. KELLY.
6. Job, or Books I and II of the Psalms (as students may elect), and a study of the form and characteristics of Hebrew poetry. *Twice a week throughout the year.* Dr. KELLY.

   Courses 5 and 6 will be given in alternate years.
7. Exercises in writing Hebrew. *Once a week throughout the year.* Dr. KELLY.

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8. Hebrew Syntax, with selected passages for reading. *Twice a week throughout the year.* Dr. KELLY.

23. History of the Hebrew People from the Settlement in Canaan to the Division of the Kingdom. A sketch of the literature of the period. *Once a week throughout the year.* Professor WILLIAMS.

24. History of the Hebrew People from the Division of the Kingdom to the Fall of Jerusalem. The literature of the Assyrian period. *Once a week throughout the year.* Professor WILLIAMS.

25. History of the Jewish People during the Maccabean and Roman periods. *Once a week; second semester.* Professor WILLIAMS.

26. Historical Geography of Palestine; Hebrew Archaeology; Recent Discoveries. *Once a week throughout the year.* Dr. KELLY.

12. Arabic. *First semester.* Easy reading and principles of the language. *Second semester.* Reading of selections and some of the shorter suras of the Quran. *Twice a week.* Dr. KELLY.

13. Advanced Arabic: The Quran. *Once a week throughout the year.* Dr. KELLY.

14. Elementary Assyrian. A study of selected texts and of (a) the grammatical principles of the language, and (b) the use of the material for lexicographical purposes. *Twice a week throughout the year.* Dr. KELLY.

15. Bibical Aramaic, ten weeks; Syriac, the remainder of the year. *Twice a week.* Alternates with 14. Dr. KELLY.

For Undergraduates and Graduates.

9. Advanced Hebrew Syntax. *Twice a week; first semester.* Professor WILLIAMS.

10. Advanced Hebrew Etymology. *Twice a week; second semester.* Courses 9 and 10 will be given in alternate years. Dr. KELLY.

11. Hebrew Seminary. In successive years Isaiah I.-XXXIX., XL.-LXVI., and the third and fourth books of the Psalms will form the center of the work. *Once a week (two hours) throughout the year.* Professor WILLIAMS and Dr. KELLY.

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HELLENISTIC GREEK.

Primarily for Undergraduates.

16. Selected chapters from the Gospels, and the general principles of Hellenistic Greek. For students who have not studied classical Greek. *Four times a week throughout the year.* Mr. KNIGHT.
17. This course is the same as course 16, but begins as a two-fifths study in the second semester of each year, and continues as a two-fifths study during the first semester of the following year. Professor WILLIAMS and Mr. KNIGHT.
18. Matthew and Mark, and a study of the Etymology of Hellenistic Greek. *Twice a week throughout the year.* Professor WILLIAMS.
19. Luke and Acts. Historical study with careful attention to syntax. *Twice a week throughout the year.* Professor WILLIAMS.

For Undergraduates and Graduates.

20. John. Critical study and textual criticism. *Twice a week throughout the year.* Professor WILLIAMS.
21. Hellenistic Greek Seminary. In successive years the Epistle of Paul to the Romans, the second gospel, and the fourth gospel will form the center of the work. *Once a week (two hours) throughout the year.* Professor WILLIAMS.
22. Advanced Hellenistic Greek Grammar. *Twice a week throughout the year.* Professor WILLIAMS.

ENGLISH.

PROFESSOR FREEMAN, PROFESSOR FRANKENBURGER, PROFESSOR HUBBARD, ASSOCIATE PROFESSOR LATHROP, ASSISTANT PROFESSOR PYRE, ASSISTANT PROFESSOR CAIRNS, ASSISTANT PROFESSOR DODGE, DR. BEATTY, DR. BROWN, MR. BLEYER, MR. FRAMPTON, MR. COOK, MISS MORRILL, MR. DICKINSON, MR. M'KINNEY, MR. ADAMS, MR. DAGGY, MISS LAMONT, AND MR. DENU.

1. Freshman English. English Prose Style. Composition. The elements of effective writing in prose, based upon direct study of selected authors, with training in composition. *Three hours a week throughout the year.* Twenty-three

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sections. For hours and rooms see time table or required studies. Required of freshmen in all courses. Professor HUBBARD, Assistant Professor PYRE, Assistant Professor CAIRNS, Assistant Professor DODGE, Dr. BEATTY, Mr. BLEYER, Mr. FRAMPTON, Mr. COOK, Miss MORRILL, Mr. DICKINSON, Mr. MCKINNEY, and Mr. ADAMS.

RHETORIC AND ORATORY.

Primarily for Undergraduates.

2. Sophomore Composition. Elective for sophomores who have finished the required English of the freshman year. Required in the Course in Commerce. *Tu., Th., at* 8 *and* 11. Associate Professor LATHROP, Dr. BROWN, and Dr. BEATTY.
3. Development of Oratorical Themes. Lectures on the theory of oratory. Study of the oration from the point of view of purpose, with anaylsis of oratorical masterpieces. Preparation and delivery of original orations. *Throughout the year.* Mr. DENU.
4. Advanced Rhetoric. Open to those who have completed courses 1 or 2. Analysis of great essays, orations, and prose fiction, with higher rhetorical and literary criticism. Lectures with supplementary readings. *Throughout the year; M., W., F., at* 12. Elective. Professor FRANKENBURGER and Mr. DAGGY.
5. Forensics. *Throughout the year; M., W., F.,* at 11. Professor FRANKENBURGER and Mr. DAGGY.
6. Advanced Composition I. Elective for juniors and seniors, and for sophomores who have done very good work in course 1. This course may not be elected by semesters. No credit will be given for less than the whole course. *Throughout the year; M., W., F., at* 11. Assistant Professor DODGE and Dr. BROWN.
7. Advanced Composition II. Exposition. Study of such authors as Coleridge, Lyell, Huxley, Darwin, Bagehot; practice in expository composition, with reference to the special studies of individual students. Open to those who have had either course 2 or course 6, and to others with the consent of the instructor. *Throughout the year; Tu., Th., at* 11. Associate Professor LATHROP.
10. Elocution and Dramatic Reading. Lectures; declamation with personal criticism; Macbeth, Othello, Merchant of

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Venice, and Hamlet. Open to those who have taken course 12, or its equivalent. *Throughout the year; Tu., Th., at* 12. Professor FRANKENBURGER and Mr. DAGGY.

11. Rhetoric, with special emphasis on argumentation and persuasion. Practice in the writing of argumentative composition, with a view to the acquisition of an effective style in debate. Lectures with supplementary readings. *Throughout the year; Tu., Th., at* 9. Mr. DENU.

12. Elocution. Lectures will be given upon vocal physiology, the proper use and care of the voice, reading and gesture. Daily practice in vocal expression. *Throughout the year; M., W., F.* Miss LAMONT and Mr. DAGGY.

13. Oratorical Delivery. Study of the principles of public speaking. The purpose of this course is the cultivation of a natural and direct style in oral expression. Open to those who have had sufficient previous preparation to be able to do the work. *Throughout the year; M., W., F.* Mr. DAGGY.

14. Elocution. Reading, declamation, and lectures. *Second semester; M., W., F., at* 9. Miss LAMONT and Mr. DAGGY.

15. Elocution and Oratory. (Elective in Law School.) Voice training for quality and economy. Practice in reading and declamation from the great orators. Lectures on principles of gesture, with practical exercises. Practice in extempore speaking. Lectures and class discussions on the questions which interest the lawyer as a public speaker. *Throughout the year; Tu., Th., at* 11. Mr. DENU.

16. Declamation. Development of power and originality in the interpretation of literature, with a view to public presentation. Private rehearsals each week. Open to those who have had previous preparation. *Throughout the year; Tu., Th.* Miss LAMONT.

17. Advanced Declamation. The principles of expression in the artistic rendering of dramatic selections. Original work in the adaptation of material for public presentation. Open to students who have taken courses 12 and 16. *Throughout the year; Tu., Th.* Miss LAMONT.

For Undergraduates and Graduates.

18. Dramatic Seminary. *Throughout the year; two hours a week in one session.* Professor FRANKENBURGER.

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8. Rhetorical Seminary. Original composition; the philosophy of criticism with the deduction and application of literary canons. *Throughout the year; two hours a week in one session.* Open to graduates, seniors, and juniors. Professor FRANKENBURGER.

9. Literary Criticism. The course will consist of a consideration of the main principles of literary criticism, and a study of the ballads and romances, as an introduction to the study of comparative literature. *Throughout the year; Tu., Th., at* 9. Open to juniors and seniors. Dr. BEATTY.

The advanced work in rhetoric and composition in the University is fairly equal in scope and variety to the needs of the student who is looking toward journalism. For facility in composition course 6 is provided, which meets three times a week for a year, and requires from each student a written paper at every meeting. Those finishing this course may enter upon course 7 for another year. Course 4 in advanced rhetoric, three times a week for a year, gives the philosophy of rhetorical expression, with practice in writing and criticism, and practical talks on preparation of manuscript, proof-reading, etc. Following this is course 8, which takes up style and literary criticism, twice a week for a year. The course furnishes ample practice in the writing of fiction, poetry, dramatic composition, and critical reviews.

ENGLISH LANGUAGE.

Primarily for Undergraduates.

20. Anglo-Saxon and Middle English. Required of students who take English as their major. The work of the first semester may be elected without work of the second semester. *First semester*, Anglo-Saxon; *second semester*, Middle English. *Throughout the year; M., W., F., at* 9. Professor HUBBARD.

23. Modern English Grammar. A course for teachers of English. *Second semester; Tu., Th., at* 8. Professor HUBBARD.

For Undergraduates and Graduates.

21. Anglo-Saxon Poetry. Study of selections, survey of Anglo-Saxon literature. Open to students who have taken the Anglo-Saxon of course 20. *Second semester; M., W., F., at* 8. Professor HUBBARD.

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22. Beowulf. Introduction to the study of old Germanic life. Open to seniors. *First semester; M., W., F., at* 8. Professor HUBBARD.

For Graduates.

24. English Philology Seminary. Critical study of texts; historical grammar; dialects. *Two hours a week throughout the year.* Professor HUBBARD.

See also Comparative Philology, course 1; French, course 25.

ENGLISH LITERATURE.

Primarily for Undergraduates.

30. General Survey of English Literature. This course is prerequisite to all other courses in English literature. *Throughout the year; M., W., F., at* 9 *and* 11. Open to students who have taken course 1 or its equivalent. Required of sophomores who take English as their major. Assistant Professor PYRE, Assistant Professor CAIRNS, Dr. BROWN, and Mr. BLEYER.

31. Chaucer. History of the literature of the fourteenth and fifteenth centuries. Required for English major. *First semester; M., W., F., at* 12. Dr. BROWN.

37. Study of Longer Poems. Lectures, collateral reading, and papers. Given in alternate years. (Omitted in 1904-05.)
a. National Epics. *First semester; Tu., Th., at* 5.
b. Narrative Poems. *Second semester; Tu., Th., at* 5. Professor FREEMAN.

40. American Literature. A general survey of literary writings in America from the earliest times. This course must be preceded by course 1, and should be preceded or accompanied by course 30. *Throughout the year; Tu., Th., at* 9. A section will be formed at 10, if a sufficient number desire. Assistant Professor CAIRNS.

For Undergraduates and Graduates.

32. The Literature of the Elizabethan Period. Given in alternate years. *First semester; M., W., F., at* 10. Assistant Professor PYRE.

33. The Eighteenth Century. From Dryden to Cowper. Lectures, collateral reading, papers. *Throughout the year; M., W., F., at* 9. Assistant Professor DODGE.

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34. The English Romantic Movement. Given in alternate years. *Second semester; M., W., F., at* 10. (Omitted in 1904-05.) Assistant Professor PYRE.

35. The Victorian Era. Given in alternate years. *Second semester; M., W., F., at* 10. (Omitted in 1905-06.) Assistant Professor PYRE.

36. The Drama. Shakespeare. A part of the first semester is devoted to history of the English drama, the remainder of the year to Shakespeare. Open to seniors. Required of seniors taking English as their major. *Throughout the year; M., W., F., at* 11. Professor FREEMAN.

38. English Lyric Poetry. Given in alternate years. *Throughout the year; M., W., F., at* 10. (Omitted in 1905-06.) Professor FREEMAN.

39. The Novel. The development of the English novel. Study of representative novels. *Throughout the year; Tu., Th., at* 10. Associate Professor LATHROP.

41. Spenser. The course aims to cover the greater part of Spenser's poetical work. *Second semester; M., W., F., at* 9. Assistant Professor DODGE.

42. Poetics. The science of verse. The history of English verse-forms. *Second semester; Tu., Th., at* 9. Assistant Professor PYRE.

43. The English Essayists. *Second semester; M., W., F., at* 9. (Omitted in 1904-05.) Assistant Professor DODGE.

45. Browning. The interpretation of representative poems. *First semester; M., W., F., at* 9. Professor HUBBARD.

46. Comparative Literature. Medieval literature in French and English, with especial reference to the *Story of King Arthur*. Some acquaintance with one of the following subjects is expected of students who elect this course: Anglo-Saxon, Chaucer, or Old French. *Second semester; M., W., F., at* 12. Dr. BROWN.

47. Significant Movements in American Literature. Open to students who have completed course 40, or its equivalent. The course may be elected by semesters. Assistant Professor CAIRNS.

48. English Prose. Study of the great prose writers of the eighteenth and nineteenth centuries. Lectures on the history of English literature. This course is designed especially for students of prose composition, to be taken in connection

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with courses 2, 6, and 7. It may be substituted for course 30 as a prerequisite to all other courses in English literature. *Throughout the year; M., W., F.*

49. English Biography. Lectures on English biographical writing, with detailed study of classic biographies. *First semester; Tu., Th., at* 11. Assistant Professor PYRE.

Primarily for Graduates.

44. English Literature Seminary. Subject for 1903-04: Predecessors of Shakespeare. *Throughout the year; Tu.,* 4 *to* 6. Open to graduates and properly qualified seniors. Professor FREEMAN, Professor HUBBARD, and Assistant Professor DODGE.

GERMAN.

PROFESSOR HOHLFELD, PROFESSOR VOSS, ASSISTANT PROFESSOR STERLING,* ASSISTANT PROFESSOR ROEDDER, ASSISTANT PROFESSOR FAUST, MR. MEISNEST, DR. EVANS, DR. HANDSCHIN, MR. BUSSE, MISS HERFURTH, DR. VEERHAUSEN, MR. GOODNIGHT, MR. PFUND, AND MR. HAUSSMANN.

ELEMENTARY COURSES.

For Undergraduates.

1. Beginners' German. Grammar and easy readings, with practice in speaking and writing German. *Four times a week.* Seven sections. Assistant Professor ROEDDER, Dr. EVANS, Mr. BUSSE, Miss HERFURTH, Dr. VEERHUSEN, Mr. PFUND, and Mr. HAUSSMANN.

1b. Beginners' German. Second semester only. In this course the work of the first semester is repeated in a special section. Students beginning the study of German at this time may complete course 1 in the Summer Session. *Second semester; M., Tu., Th., F., at* 3. Dr. VEERHUSEN.

2. Second Year German. Modern prose, narrative, and dramatic, and a drama of Lessing or Schiller. Review of the forms, and elementary syntax. Written and oral exercises. For students who have had course 1, or two years of high school German, or an equivalent. Engineering freshmen

*On leave of absence for 1903-04.

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and students specializing in science may take course 2 in place of 2E or 2S. *Four times a week.* Seven sections. Assistant Professor FAUST, Mr. BUSSE, Miss HERFURTH, Dr. VEERHUSEN, Mr. GOODNIGHT, and Mr. POUND.

2M. Second Year German. Open only to students of Latin or Greek. *Four times a week.* Two sections.

2S. Second Year German. For students specializing in science. Identical with course 2, except that easy scientific prose is introduced in the second semester. *Tu., W., Th., F., at* 11. Dr. HANDSCHIN.

2C. For freshmen in the Course in Commerce. Modern prose and poetry. Practice in speaking and writing German. *Tu., W., Th., F., at* 9. Dr. ROEDDER.

2E. For Engineering freshmen. A regular second year's course, like course 2, except that easy scientific prose is introduced in the second semester. *Four times a week.* Four sections. Mr. MEISNEST, Dr. EVANS, and Dr. HANDSCHIN.

2A. Advanced Second Year German. Open to students who enter the University with three years of high school German. *Four times a week.* Two sections. Miss HERFURTH and Mr. GOODNIGHT.

Freshmen entering with four years of high school German, after consultation with the instructor in charge, can elect work from the following courses: 3S, 3C, 3E, 6, 7, 9, 15, 17 to 22; unless a special class be organized for them.

ADVANCED PRACTICE COURSES.

Primarily for Undergraduates.

3A. Third Year German. Open to freshmen who enter the University with four years of high school German. *M., Tu., W., F., at* 12.

3S. Scientific German. For students specializing in science who have had course 2 or 2S. Rapid reading of scientific prose. *Throughout the year; W., F., at* 9. Dr. HANDSCHIN.

3C. For sophomores in the Course in Commerce. Reading, conversation, and composition. *Tu., Th., at* 11. Dr. VEERHUSEN.

3E. For Engineering sophomores. Advanced prose on subjects of technical science. *Half-year course, given in both semesters; Tu., W., Th., at* 12. Four sections. Mr. MEISNEST and Mr. GOODNIGHT.

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4C. For juniors in the Course in Commerce. Reading, conversation, composition, chiefly on topics of special value to students of commerce. *Tu., Th., at* 9. Assistant Professor STERLING.

5C. For seniors in the Course in Commerce. A continuation of the work of 4C. *Tu., Th., at* 10. Dr. HANDSCHIN.

6. Grammar and Composition. Open to students who have had course 2 or an equivalent, but desire more practice in grammar and prose composition. Without special permission, this course can be taken only in connection with some other course in the department. *Throughout the year; W., at* 12. Miss HERFURTH.

7. Elementary Conversation. Practice in class; the work at home not to exceed one hour per week. Open on the same conditions as course 6. *Throughout the year; Tu., Th., at* 3. *One-fifth credit.* Dr. HANDSCHIN.

9. Critical German Prose. Rapid reading in history, biography, criticism, etc. Especially designed for students who wish to read with ease German books on historical, philosophical, and literary topics. Open to students who have had course 2 or an equivalent. *Second semester; Tu., Th., at* 12. Mr. GOODNIGHT.

10. Composition and Conversation; with special work in German syntax. Open to students who have had at least four semester hours in advance of course 2. *Throughout the year; Tu., Th., at* 12, Mr. BUSSE; *W., F., at* 11, Mr. MEISNEST.

12. Advanced practice in writing and speaking German. Discussions and essays on topics of German life and literature. Open to graduates, and to such undergraduates as have had course 10 or an equivalent. *Throughout the year; W., F., at* 10. Assistant Professor FAUST.

14. Teachers' Course. A critical study of the methods of teaching modern foreign languages. Lectures, reports, discussions, and practice teaching. Elementary phonetics and review work in grammar. Open to seniors and graduate students. *Th., at* 3. Professor HOHLFELD and Professor VOSS.

Courses 12, 33, and 50 and 51 are required of those who expect to be recommended to teach German as their principal subject. Courses 12 and 14 can be counted by graduate students taking German as their major.

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GERMAN LITERATURE.

Primarily for Undergraduates.

15. Classical Prose and Verse. Selections from eighteenth and nineteenth century authors; and written exercises (once every two weeks). For students who have had course 2 or 2M and intend to specialize in German. *Throughout the year; M., Tu., Th., at* 10, Mr. MEISNEST; *M., W., F., at* 3, Dr. EVANS.

    To make a five-hour course, this course should be combined with 17 or 18, or with 6 and 7.

17. Modern German Dramatists. Grillparzer (*first semester*) and Hebbel (*second semester*), or other authors like Ludwig, Wildenbruch, and Hauptmann. *Throughout the year; Tu., Th., at* 11. Dr. HANDSCHIN.

18. Modern German Novelists. Readings from authors like Scheffel, Freytag, Keller, C. F. Meyer, and Sudermann. *Throughout the year; M., W., F., at* 11. Dr. HANDSCHIN.

20. Schiller. Introductory study of his life and selections from his works. *Maria Stuart* or *Braut von Messina*, and *Wallenstein. Throughout the year.* Two sections: Section 1 conducted chiefly in English, *W., F., at* 10; *section* 2 conducted more in German, *Tu., Th., at* 8. Dr. EVANS and Mr. BUSSE.

21. Modern German Poetry. *First semester:* Lyrics and ballads. *Second semester:* Epic poems, like Scheffel's *Der Trompeter von Säckkingen* and Baumbach's *Frau Holde. Throughout the year; M., W., F., at* 12. Given in 1904-05; to be omitted the year after. Assistant Professor STERLING.

22. Heine's Prose and Verse; with a study of his life and of his work in general. *Throughout the year; Tu., Th., at* 3. (Omitted in 1904-05.) Assistant Professor FAUST.

23. Goethe. Introductory study of his life and selections from his works. *Goetz* or *Egmont, Iphigenie* or *Tasso, Gedichte.* Private reading. *Throughout the year; Tu., Th., at* 9. (Omitted in 1904-05.) Professor Voss.

24. Lessing. Introductory study of his life and selections from his works. *Emilia Galotti, Nathan*, prose selections. Private reading. *Throughout the year; Tu., Th., at* 9. Alternates with 23. Dr. ROEDDER.

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26. Selected Works of Lessing, Goethe, and Schiller, with introductory studies of their lives. *Throughout the year; M., W., F., at* 9. (Omitted in 1904-05.) Professor HOHLFELD.

27. Selected Works of Kleist, Uhland, and Heine, with introductory studies of their lives. *Throughout the year; M., W., F., at* 9. Alternates with 26. Professor HOHLFELD.

Courses 15, 17, 18, 20, 21, and 22 are open to students who have had course 2 or its equivalent. Students who have had more work in German will be required to do a larger amount of reading than the regular classes in order to get full credit for these courses.

Courses 23, 24, 26, and 29 are open to students who have had at least six semester hours in advance of course 2.

Without special permission, no student is allowed to count more than two courses from each of the two foregoing groups.

All courses of this group and all following courses (unless otherwise stated) are conducted in German as much as possible.

For Undergraduates and Graduates.

30. Goethe's *Faust.* Interpretation and discussion of both parts, with informal lectures and collateral reading in Faust literature. This course is largely conducted in English. *Throughout the year; Tu., Th., at* 9. Professor HOHLFELD.

31. Outline of the History of German Literature. English lectures, and private reading of representative works of German literature in English translations. This course does not require a particular knowledge of the language and is primarily intended for students who do not intend to specialize in German. Not open, without special permission, to students below the junior class. *Throughout the year; M., at* 3. Professor HOHLFELD.

33. History of German Literature from the Earliest Period to the Nineteenth Century. A general survey course for students specializing in German. Lectures, reports, and readings. Franke's *History of German Literature* and Max Müller's *German Classics*, supplemented by additional reading in the masterpieces of German literature. *Throughout the year; W., F., at* 9. (Omitted in 1904-05.) Professor HOHLFELD.

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34. Studies in Nineteenth Century Authors. Lectures, collateral reading, and exercises in literary criticism. The selection of authors varies more or less from year to year. *Throughout the year; twice a week.* Assistant Professor FAUST.

36. Popular German Literature. *Volkslied, Märchenliteratur,* and *Volksbücher (first semester);* modern dialect literature (*second semester*). *Twice a week.* (Omitted in 1904-05.) Assistant Professor ROEDDER.

38. Shakespeare in Germany. A study of the more important translations of Shakespeare into German, and of the influence of Shakespeare on German literature, especially in the 17th and 18th centuries. *Second semester; twice a week.* Mr. MEISNEST.

Courses 30-38 are open to graduates and to those undergraduates who have had at least one of the courses 23 to 27.

Primarily for Graduates.

41. The Development of the German Drama from its Beginnings to the Time of Lessing. Lectures, papers, and private readings. Special attention is given to the religious drama, the *Fastnachtspiel,* the *Schuldrama,* the English influence of the seventeenth, and the French influence of the first half of the eighteenth century. *Throughout the year; twice a week.* (Omitted in 1904-05.) Dr. EVANS.

44. The Development of German Literature from the Twelfth to the End of the Fifteenth Century. Lectures, reports, and collateral reading. This course does not deal with the textual interpretation of the documents themselves, but with the evolution of the literary movements of the period, with special reference to the political, social, religious, and artistic aspirations back of them. Special attention will be given to the later reappearance of medieval ideals in modern literature. *Throughout the year; twice a week.* Alternates with course 41. (Given in 1904-05.) Dr. EVANS.

46. The Literary Movements of the Eighteenth and Nineteenth Centuries. Lectures, papers, and private reading. Special attention will be given to the great cultural movements finding expression in the literature of the period and to influences from and upon foreign literatures. *Throughout the year; Tu., Th., at* 11. Alternates with course 33. (Given in 1904-05.) Professor HOHLFELD.

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48. Seminary in German Literature. The aim of the seminary is to train properly qualified students in the scientific methods of the historical and critical study of literature. The rotation of subjects forms a cycle of at least three years. In 1902-03 the work was in the Storm and Stress movement and in German Romanticism; in 1903-04 in Goethe (*first semester*) and Goethe's *Faust* (*second semester*). In 1904-05 the work will be in the literature of the seventeenth and the first half of the eighteenth century. *Throughout the year; W.*, 3-5. Professor HOHLFELD.

Courses 41 to 48 cannot be taken by undergraduates unless they have had courses 33 and 50, or their equivalents.

GERMAN PHILOLOGY.

PROFESSOR VOSS AND ASSISTANT PROFESSOR ROEDDER.

For Undergraduates and Graduates.

50. Introduction to the Historical Study of German, based on Behaghel, *Die deutsche Sprache*. Lectures and recitations. *First semester; M., W., at* 11. Professor Voss.

51. Introduction to the Study of Middle High German. Lectures and recitations. *Second semester; M., W., at* 11. Professor Voss.

Courses 50 and 51 are required of students who expect to teach German.

52. Advanced Middle High German. Studies in the language and literature of the twelfth and thirteenth centuries. Lectures and recitations. *Tu., Th., at* 10. Alternates with course 53. (Omitted in 1904-05.) Professor Voss.

53. Early Modern High German. Studies in the language and literature of the fifteenth and sixteenth centuries. Lectures and recitations. *Tu., Th., at* 10. Alternates with course 52. Professor Voss.

54. Gothic Grammar, with readings from the Gospels. Braune-Balg's *Gothic Grammar*. *First semester; twice a week.* In alternate years. (Omitted in 1904-05.) Assistant Professor ROEDDER.

55. Old High German, with special reference to German life and culture. Braune's *Althochdeutsche Grammatik* and readings from Braune's *Althochdeutsches Lesebuch*. *Second semester; twice a week.* In alternate years. (Omitted in 1904-05.) Assistant Professor ROEDDER.

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56. Classical German Philological Literature. *Once a week.* Professor Voss.

57. Introduction to the Study of *Volkskunde.* Lectures and collateral reading. *First semester; once a week.* Assistant Professor ROEDDER.

58. Old Saxon, with special reference to Germanic life and culture. Holthausen's *Altsaechsisches Elementarbuch* and extracts from the *Heliand*, ed. Behaghel. *First semester; twice a week.* In alternate years. Assistant Professor ROEDDER.

59. Germanic Mythology and Heroic Legends. Lectures and collateral reading. *Second semester; twice a week.* In alternate years. Assistant Professor ROEDDER.

Primarily for Graduates.

60. History and Grammar of the Modern High German literary language. *First semester; M., W., at* 9. In alternate years. (Omitted in 1904-05.) Professor Voss.

62. History of German Philology. Lectures, readings, and reports. *First semester; M., W., at* 9. In alternate years. Professor Voss.

63. Anleitung zu Arbeiten auf dem Gebiete der deutschen Philologie. *Second semester; W., at* 9. Professor Voss and Assistant Professor ROEDDER.

64. Pro-seminary in German Philology. For 1903-04; Middle Low German texts *(first semester);* Gothic *(second semester).* For 1904-05. Old High German texts *(first semester);* Old Saxon texts *(second semester). Once a week.* Assistant Professor ROEDDER.

65. Philological Seminary. The work of the seminary varies. While special attention is given to the classical writers of the Middle High German period, the other periods also, especially the transition period from Old to Middle High German, and from Middle to Modern High German, will be studied. Hartmann von Aue, Gottfried von Strassburg, Wolfram von Eschenbach, *Deutsche Gedichte des XI. and XII. Jahrhunderts*, Reinke de Vos, Sebastian Brant, Thomas Murner, Hutten, Luther, Fischart, and Hans Sachs. *Tu.*, 3-5. Professor Voss.

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SCANDINAVIAN LANGUAGES.

PROFESSOR OLSON.

This department offers instruction in all of the Scandinavian languages (Norwegian, Danish, Swedish, and Old Norse). From one year's instruction in Modern Norse the student is expected to be able to read both Norwegian and Danish authors. The principal courses are devoted mainly to Norwegian authors, but additional instruction in Danish and Swedish literature is offered to students desiring to pursue these branches beyond the limits of the prescribed courses.

Courses 2a and 2b, taken together, or courses 3 and 4, may be taken as part of the required language work. (See Required Studies, p. 83.)

Primarily for Undergraduates.

1. Modern Norse. Olson's *Norwegian Grammar and Reader*, together with easy selections in prose and poetry. For beginners. *Three times a week throughout the year.*

2a. Modern Norse. Björnson's *Synnöve Solbakken, En glad Gut*, and his shorter peasant stories; Gunderson's collection of *Norske Digte. Three times a week throughout the year.*

2b. Written and Oral Translation into Norse. The reading of prose selections as a basis for work in composition and conversation. *Once a week throughout the year.*

3. Selections from the *Reader;* Killand's *Skipper Worse.* Two dramas by Holberg and three by Oechlenschlaeger are assigned for outside reading. *Twice a week throughout the year.*

4. Ibsen's *Brand* and *Peer Gynt*, and selections from Norwegian and Danish poetry. *Twice a week throughout the year.*

5. History of Dano-Norwegian Literature. Broch and Seip's *Norsk og dansk Litteraturhistorie*, with lectures and papers presented by students on the authors under discussion. *Three times a week throughout the year.*

6. Swedish Literature. Tegner's *Frithiofs Saga*, Runeberg's *Fänrik Stals Sägner*, Vinsnes and Aanrud's *Svenske Digtere*, and Warburg's *Svensk Litteraturhistoria. Twice a week throughout the year.*

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7a. Lectures on early Scandinavian literature and antiquities, with illustrative readings in translation. *Once a week; first semester.*

7b. Lectures on modern Scandinavian authors and literary epochs, with illustrative readings in translation. *Once a week; second semester.*

A knowledge of the Scandinavian languages is not required for courses 8a and 8b.

For Undergraduates and Graduates.

8. Old Norse. Vigfusson and Powell's *Icelandic Prose Reader*, or Kahle's *Altisländisches Elementarbuch*, and Nygaard's *Udvalg af den norröne Literatur. Twice a week throughout the year.*

9. Modern Norwegian Literature. The critical reading, with papers and discussions, of representative novels: Björnson's *Synnove Solbakken;* Lie's *Den Fremsynte*, and Kielland's *Skipper Worse. Twice a week; one semester.*

10. Modern Norwegian Literature. The critical reading, with papers and discussion of representative dramas: Björnson's *Mellem Slagene* and *Sigurd Slembe*, and Ibsen's *Kongsemnerne, Peer Gynt*, and *Et Dukkehjem. Twice a week; one semester.*

11. Studies in Norwegian Poetry. Selections from Wergeland, Welhaven, Munch, Moe, Björnson, and Ibsen, to illustrate the different epochs in the development of modern Norwegian literature. *Once a week; one semester.*

12. Norwegian Dialect Writers. Selections from Aasen, Vinje, Garborg, and Sivle, together with a study of the language reform movement. *Once a week; one semester.*

FRENCH.

PROFESSOR OWEN, ASSISTANT PROFESSOR GIESE, ASSISTANT PROFESSOR GAY, MR. PATZER, DR. BRAUER, AND MR. SEYMOUR.

For Undergraduates.

1. General Elementary Course. Otto's *French Conversation Grammar; Roman d'un Jeune Homme Pauvre* and *La Petite Fadette* (the former read mainly and the latter altogether independently of the class-room); *Le Cid, Le Misanthrope, Athalie. Four times a week throughout the year.*

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Section 1. *M., Tu., W., Th., at* 10. Assistant Professor GIESE.
Section 2. *M., Tu., W., Th., at* 12. Assistant Professor GAY.
Section 3. *Tu., W., Th., F., at* 8. Mr. SEYMOUR.
Section 4. *M., Tu., W., Th., at* 10. Mr. PATZER.
Section 5. *Tu., W., Th., F., at* 8. Dr. BRAUER.
Section 6. *M., Tu., W., Th., at* 9. Dr. BRAUER.
Section 7. *M., Tu., W., Th., at* 11. Dr. BRAUER.
Section 8. *M., Tu., W., Th., at* 10. Mr. MACNISH.
Section 9. *M., Tu., W., Th., at* 12. Mr. MACNISH.

2. Special Elementary Course for Classical Students. Like course 1, but with supplementary work. *Throughout the year; Tu., W., Th., F., at* 8. Assistant Professor GAY.

3. Special Elementary Course for Engineers. A modification of course 1 to meet the requirements of the College of Mechanics and Engineering. *Throughout the year; M., Tu., W., Th., at* 8, Mr. MACNISH; *M., Tu., W., Th., at* 9, Mr. MACNISH.

As many students desire a reading knowledge of French only, the effort of the above elementary courses is concentrated upon reading. Students are expected at the end of an elementary course to read with sufficient ease and accuracy to make a practical use of French text-books in the prosecution of their studies.

4. Special Elementary Course for Students in Commerce. Chardenal's *Complete French Course*, Super's *French Reader, Gil Blas, Colomba, Le Roi des Montagnes. Throughout the year; M., Tu., W., Th., at* 9. Mr. PATZER.

Primarily for Undergraduates.

5. Advanced Reading and Syntax. Reading in class of parts of *Cinq-Mars, Ursule Mirouet;* reading independently for examination of the *Histoire de Charles XII.*, or other easy French to be assigned. *Throughout the year; M., W., F., at* 11. Professor OWEN.

6. Continuation of Course 5. Reading of *Travailleurs de la Mer*, etc. *Throughout the year; M., W., at* 12, *unless changed by special arrangement.* Professor OWEN.

The method pursued in these courses will approximate to that of the seminary. Special seminary courses will be furnished whenever this seems desirable.

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7. Scientific French Reading for Engineers. Continuation of course 3. Herdler's *Scientific Reader*, Luquiens' *Popular Science*, and other scientific prose. *First semester; M., W., F., at* 2. Dr. BRAUER.

10. Composition. Open to students who have finished courses 1, 2, 3, or 4, or an equivalent. *Throughout the year; Tu., Th., at* 9. Assistant Professor GAY.

11. Continuation of Course 10. *Throughout the year; Tu., Th., at* 10. Assistant Professor GAY.

15. Conversation and Reading. This course is open only to students who have finished courses 1, 2, 3, or 4, or an equivalent. *Twice a week throughout the year.* Section 1. *Tu., Th., at* 12. Assistant Professor GIESE.

17. Conversation, Composition, and Reading. A practical course for sophomore students in Commerce. *Throughout the year; Tu., Th., at* 11. Mr. PATZER.

18. Commercial Correspondence. For junior students in Commerce. *Twice a week throughout the year.* Mr. PATZER.

19. Commercial Correspondence (continued). For senior students in Commerce. Mr. PATZER.

20. History of French Literature from the Renaissance to the present time. Lectures, with collateral reading. This course is conducted in English. It is open to students who read French with facility. *Throughout the year; M., W., F., at* 12. Assistant Professor GIESE.

25. Lectures on Thought and Language. *First semester; M., at* 11. At present embodied in course 5. Professor OWEN.

For other courses see below.

For Undergraduates and Graduates.

30. Principles of Language; especially the correspondence of thought and sentence, as illustrated in the Romance languages. *Once a week; first semester.* Professor OWEN.

31. Literature of the Nineteenth Century. Lectures, reports, and collateral reading. This course is conducted entirely in French. *Throughout the year; Tu., Th., at* 8. Assistant Professor GIESE.

32. Literature of the Seventeenth Century. Lectures, reports and collateral reading. This course is conducted entirely in French. *Through the year; Tu., Th., at* 8. (Omitted in 1904-05.) Assistant Professor GIESE.

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34. The Carlovingian Cycle, with readings from *La Chanson de Roland*, ed. G. Paris, and *Le Voyage de Charlemagne*, ed. Koschwitz. *Twice a week; throughout the year.* Assistant Professor GAY.
35. The Arthurian Cycle, with a special study of Chrestien de Troyes. *Twice a week; throughout the year.* Assistant Professor GAY.
36. The Picard and Norman Dialects, with special reference to the history of the French element in English *Aucassin et Nicolete*, ed. Suchier; *Les Lais de Marie de France*, ed. Warnke. *Twice a week; throughout the year.* Assistant Professor GAY.
37. Seminary in the Old French Theater. *First semester; two hours a week.* Assistant Professor GAY.
38. Provencal. *Second semester; two hours a week.* Assistant Professor GAY.

Courses 34 to 36 may be taken successively, or two may be taken conjointly, with assigned readings sufficient to make a major for a second degree.

ITALIAN.

ASSISTANT PROFESSOR GAY AND PROFESSOR OWEN.

Primarily for Undergraduates.

1. Elementary. Translation into English of the Italian exercises in Sauer's *Conversation Grammar*, and of Manzoni's *I Promessi Sposi*. This course is in general like that in Spanish, with which it alternates. *Three times a week throughout the year.* Professor OWEN.
2. Advanced. Dante and other classics. *Twice a week throughout the year.* Assistant Professor GAY.

SPANISH.

ASSISTANT PROFESSOR GIESE, PROFESSOR OWEN, AND MR. SEYMOUR.

Primarily for Undergraduates.

1. Elementary. Translations into English of the Spanish exercises in Sauer's *Conversation Grammar;* Knapp's *Spanish Readings* and Marsh's *Doña Perfecta.* Alternates with Ital-

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ian. *Three times a week throughout the year.* Professor OWEN.

2. Advanced. Reading of selections from Cervantes *(Don Quijote)*, from Calderon *(El Magico Prodigioso)*, and from for sophomore students in Commerce. *Throughout the year; Tu., Th., at* 11. Assistant Professor GIESE.
3. Elementary. For students in Commerce. Giese's *First Spanish Book and Reader. Throughout the year; section 1, M., Tu., W., Th., at* 9; *section* 2, *M., Tu., W., Th., at* 12. Mr. SEYMOUR.
4. Conversation, Composition and Reading. A practical course for sophomore students in Commerce. *Throughout the year; Tu., Th., at* 11. Assistant Professor GIESE.
5. Conversation, Composition, Reading, and Commercial Correspondence. For junior students in Commerce. *Throughout the year; W., F., at* 11. Mr. SEYMOUR.
6. Conversation, Composition, Reading, and Commercial Correspondence (continued). For senior students in Spanish. *Twice a week throughout the year.* Mr. SEYMOUR.

MATHEMATICS.

PROFESSOR VAN VELZER, PROFESSOR SLICHTER, ASSISTANT PROFESSOR SKINNER, ASSISTANT PROFESSOR DOWLING, MR. CRATHORNE, MR. WOLFF, MR. PERSONS, AND MISS ALLEN.

Primarily for Undergraduates.

1. Algebra. A brief course in University algebra; prerequisite to all other courses in mathematics except 2. *One semester; three times a week; first and second semesters.* Professor VAN VELZER, Assistant Professor SKINNER, Assistant Professor DOWLING, and Miss ALLEN.
2. Trigonometry and Logarithms. An elementary course; prerequisite to all other courses in mathematics except 1 and 7. *One semester; three times a week. First and second semesters.* Professor VAN VELZER, Assistant Professor SKINNER, Assistant Professor DOWLING, and Miss ALLEN.
3. Algebra (continuation of course 1). This course is elective for all students who have taken course 1. *Second semester; twice a week.* Assistant Professor SKINNER.

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4. Analytic Geometry (elementary course). Straight line, conic sections, general equation of the second degree, transcendental curves, and an introduction to geometry of three dimensions. *Twice a week for one year.* Assistant Professor DOWLING.
5. Calculus (elementary course). Differentiation and integration of functions of one variable with the usual geometric applications. *Three times a week for one year.* Assistant Professor DOWLING.
7. Commercial Algebra. Required of students in the Course in Commerce. *Twice a week; second semester.* Assistant Professor DOWLING.

For Undergraduates and Graduates.

11. Calculus (advanced course). Partial derivatives and multiple integrals with the usual geometric applications. *Twice a week for one year.* Assistant Professor SKINNER.
12. Differential Equations. Ordinary and partial differential equations with a few geometric and mechanical applications. Murray's *Differential Equations* is used as a text. This course must be preceded by course 11 or be taken along with it. *Three times a week for one year.* Professor VAN VELZER.
13. Theoretical Mechanics. An elementary course in analytical mechanics. This course may be taken by those who have had analytic geometry and calculus. *Three times a week for one year.* Professor SLICHTER.
14. Analytic Geometry of Two Dimensions (advanced course). Modern methods in plane analytic geometry. This course must be preceded by course 4. *Three times a week for one year.* Professor VAN VELZER.
15. Projective Geometry. Holgate's translation of Reye's *Geometrie der Lage* is used as a text. *Twice a week for one year.* Assistant Professor DOWLING.
16. Analytic Geometry of Three Dimensions. This course should be preceded by courses 11 and 14. *Twice a week for one year.* Professor VAN VELZER.
17. Quaternions. *Three times a week; second semester, in alternate years.* Assistant Professor SKINNER.
18. Theory of Probabilities. A course in this subject adapted to the needs of students of science and economics will be given

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occasionally. The mathematics of the freshman year is required for admission to the class. *Twice a week for one semester.* Professor SLICHTER.

19. Differential Geometry. The application of the differential calculus to the geometry of twisted curves and sufaces. *Twice a week during the first semester in alternate years.* Assistant Professor SKINNER.

Primarily for Graduates.

20. Elliptic Functions. This course must be preceded by course 12. *Twice a week for one year.* Assistant Professor DOWLING.
21. Theory of Functions. *Three times a week for one year, in alternate years.* Assistant Professor DOWLING.
22. Newtonian Potential Function. Lectures and required readings on the theory of potential with an introduction to spherical harmonics. *Twice a week for one year.* Professor SLICHTER.
23. Partial Differential Equations of Mathematical Physics. Based on Riemann's *Lectures*, and Byerly's *Spherical Harmonics. Twice a week for one year, in alternate years.* Professor SLICHTER.
30. Theoretical Hydrodynamics. Lectures on fluid motion. *Twice a week for one year, in alternate years.* A course in the theory of elasticity may be substituted for this course. Professor SLICHTER.
32. Theory of Invariants. This course must be preceded by courses 3 and 11. *Twice a week for one year, in alternate years.* Assistant Professor SKINNER.
33. Theory and Application of Groups of Finite Order. *Three times a week for one year, in alternate years.* Assistant Professor SKINNER.
34. Theory of Numbers. Congruences, quadratic residues, quadratic forms, etc. The work is based on Dirichlet's *Zahlentheorie. Twice a week for one year, in alternate years.* Professor VAN VELZER.
35. Higher Plane Curves. The subject is presented from the point of view due to Clebsch as it has been perfected by Brill and Noether. *Twice a week for one year.* Assistant Professor DOWLING.

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36. Seminary Courses in Pure Mathematics. These courses vary from year to year according to the needs of the department. For the year 1903-04 the subject is Cubic Surfaces. *Two hours a week throughout the year.* Assistant Professor DOWLING. For 1904-05; first semester: The number system of Algebra. Assistant Professor SKINNER. *Second semester:* Some subject in the Theory of Plane Curves. Assistant Professor DOWLING.

37. Seminary Course in some subject in Applied Mathematics. *Two hours a week, throughout the year.* Professor SLICHTER.

ASTRONOMY.

PROFESSOR COMSTOCK.

For Undergraduates and Graduates.

1. General Astronomy. This course is essentially non-mathematical. Special attention is given to a direct study of the sky, supplemented by simple observations with home-made apparatus. *First semester, three times a week.*

2. Spherical and Practical Astronomy. This course can be undertaken only by students who have completed course 1 in physics, the mathematics of the freshman year, and course 1 in astronomy. The mathematics of the sophomore year must either precede or be taken concurrently with the course. *First semester, twice a week; second semester, three times a week.*

3. Special Topics in Celestial Mechanics. This course presupposes in the student a working knowledge of the infinitesimal calculus and the elements of dynamics. *Special arrangement of hours and amount of time to be given this work will be made with each student.*

Primarily for Graduates.

4. Meteorology. An elementary course in the theory and practice of meteorology with especial reference to the work of the U. S. Weather Bureau. *Second semester; three hours per week.* The details of this course are not yet complete, but it is hoped to offer the course for election by any student

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of the College of Letters and Science during the second semester of the year 1904-05.

5. Graduate Courses. Graduate students and others desiring to pursue advanced astronomical studies will be received in the Washburn Observatory as assistants and will take part in the regular series of observations with the equatorial telescopes or with the meridian instruments, at the same time continuing their theoretical studies. Facilities for independent original work will be afforded to such students, and their work, if of sufficient value, will be printed in the *Publications of the Washburn Observatory*. Eleven volumes of these *Publications* have already been issued.

For other courses of instruction consult the titles Washburn Observatory and Astronomy in the announcement of the College of Mechanics and Engineering.

PHYSICS.

PROFESSOR SNOW, PROFESSOR TROWBRIDGE, ASSISTANT PROFESSOR MENDENHALL, MR. MILLER, MR. TAYLOR, MR. COLTON, MR. TERRY, MR. BALZER, MR. BISHOP, MR. TOAN, MR. INGERSOLL, AND MR. ANDERSON.

Primarily for Undergraduates.

1. General Lectures and Introductory Laboratory Practice. This course is open to election by all students, and may be taken without difficulty by those who have not had the mathematics of the freshman year. Given as a full study throughout the year. Lectures: *M., Tu., W., Th., at* 12. Professor SNOW. *One recitation by the class in smaller sections.* Mr. COLTON. *Laboratory practice twice a week.* Mr. MILLER, Mr. TERRY, Mr. BALZER, Mr. BISHOP, and Mr. TOAN.

For Undergraduates and Graduates.

2a. Advanced Course of Experimental Lectures. Heat and light. *First semester; three times a week.* Assistant Professor MENDENHALL.

2b. Electricity and Magnetism. *Second semester; three times a week.* Professor TROWBRIDGE.

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Together with the accompanying laboratory practice (course 3), this course is especially adapted to the needs of those expecting to teach. With this end in view, the lecture demonstrations are performed by the students before the class, thus giving each person practice in the presentation and illustration of special topics.

3a. Advanced Laboratory Practice. Designed to accompany course 2. *Twice a week throughout the year. First semester:* Heat and Light. Assistant Professor MENDENHALL.

3b. *Second semester:* Electricity and Magnetism. Professor TROWBRIDGE and Mr. TAYLOR.

4. Analytical Mechanics, with Mathematical Introduction. This course will treat of those portions of mechanics which are of particular value to physics. In order that calculus methods may be used, a brief treatment of analytical geometry and the calculus will be given as an introduction. This course is recommended to those who expect to do further work in physics. *Throughout the year; twice a week.* Assistant Professor MENDENHALL.

5. Hertzian Waves and Wireless Telegraphy. This is a non-mathematical course of experimental lectures. The fundamental experiments of Hertz will be demonstrated, the subjects of resonance and directing will be treated, and the present problems in space telegraphy will be discussed. *First semester; once a week.* Professor TROWBRIDGE.

6. The Theory of Sound in its Application to Music. This course will deal with the nature of sound, the quality of musical tones, combinational tones, and beats, the relations of keys, and the bearing of the theory of sound on the development of music. *Second semester; once a week.* Assistant Professor MENDENHALL.

7. Meterology. In this course the general movements of the air, together with the accompanying phenomena, are fully discussed. Students will be given practice exercises in taking and reducing meterological observations, and in making weather predictions from data supplied by the weather bureau. *Twice a week throughout the year.* Mr. COLTON.

Course 1 or its equivalent is required as preparation for any of the above courses.

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8. Mathematical Physics. (a) Theory of Electricity and Magnetism. *First semester; three times a week.* Professor TROWBRIDGE.

(b.) Special Topics in Physical Optics: Theory of the Grating, Spectroscopy and Dispersion. *Second semester; three times a week.* Assistant Professor MENDENHALL.

This course is an extension of course 2 and is open to those who have taken course 2 or its equivalent, and also a course in the differential and integral calculus.

9. Thesis. At the beginning of the first semester, the student is expected, with the advice of the instructors, to take up some special line of investigation, which is to be conducted, under the direction of those in charge of the department, throughout the year. *Full study throughout the year.* Professor TROWBRIDGE and Assistant Professor MENDENHALL.

10. Colloquium. This is an informal meeting of the advanced students and members of the Department of Physics, held at 4:30 *o'clock on Wednesday, throughout the year*, for the critical reading and discussion of the current periodical literature. Professor TROWBRIDGE and Assistant Professor MENDENHALL.

Primarily for Graduates.

16. Electricity and Magnetism. The requirements for this course, and also for the following courses, are a good working knowledge of the calculus and the completion of the undergraduate courses 2, 3, and 8, or their equivalents. *Throughout the year; three times a week, at* 12. Professor TROWBRIDGE.

The treatment of this special course is based on that given in Drude's *Physik des Aethers*, special attention being given to the subjects of electro-magnetism and the theory of electro-magnetic waves.

17. The Electro-Magnetic Theory of Light. *Throughout the year; twice a week, at* 12. Professor TROWBRIDGE.

It is the aim in this course, which is a continuation of course 16, to give a rigid mathematical treatment of light from the electro-magnetic point of view.

Courses 16 and 17 are given in alternate years. In 1904-05 course 17 will be given.

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18. Thermodynamics. The treatment in this course will be substantially the same as that given in Buckingham's *Thermodynamics*, with additional applications to problems of radiation. *Throughout the year; twice a week, at* 12. Assistant Professor MENDENHALL.

19. Graduate Research. This course is designed for those who have completed the equivalent of the laboratory practice represented by the undergraduate courses, and who now desire to devote some time to investigation in special lines. This work will be encouraged by reserving rooms in the laboratory which are devoted exclusively to research work, and by securing whatever special apparatus may be necessary to the successful carrying out of original investigation. Professor SNOW, Professor TROWBRIDGE, and Assistant Professor MENDENHALL.

Engineering Courses.

101. General Lectures and Introductory Laboratory Practice. This course is similar in many respects to course 1, but is more technical in its nature, and is particularly designed to meet the needs of the engineering students, of whom it is required. *Lectures M. and Th., at* 4. Mr. TAYLOR. *Two recitations a week by the class in smaller sections.* Mr. TAYLOR and Mr. COLTON. *Laboratory practice twice a week throughout the year* for students in the mechanical and electrical courses; *twice a week during the first semester, and once a week during the second semester* for students in the civil engineering course. Mr. MILLER, Mr. TERRY, Mr. BALZER, Mr. BISHOP, and Mr. TOAN.

104. Precision of Electrical Measurements. A laboratory course in the exact determination of electrical quantities. Required of juniors in electrical engineering, and elective for students in the other engineering courses. *First semester; twice a week.* Mr. TAYLOR.

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CHEMISTRY.

PROFESSOR DANIELLS, PROFESSOR KAHLENBERG, PROFESSOR KREMERS, ASSISTANT PROFESSOR HILLYER, ASSISTANT PROFESSOR LENHER, ASSISTANT PROFESSOR FISCHER, DR. PATTEN, MR. SHINN, MR. HUTCHINS, MR. BRANDEL, MR. BENNER, MR. HOLMAN, MR. HOLTY, MR. TIBBALS, MR. NORTH, MR. BABAK, AND MR. MAGNUSSON.

Primarily for Undergraduates.

1. General Chemistry. Lectures and laboratory work. *Full study throughout the year.* Assistant Professor LENHER and assistants.
2. General Chemisty for Freshmen in the College of Engineering. *Two lectures, one recitation, and one three-hour laboratory period a week throughout the year.* Assistant Professor LENHER and assistants.
3. General Chemistry for Pharmacy Students. The laboratory work accompanying this course is especially designed for pharmacy students. *Eight-fifths study for the first semester; three-fifths for the second semester.* Assistant Professor LENHER and Mr. BRANDEL.

10. Analytical Chemistry. Qualitative. *Daily throughout the year; with lectures and discussions once each week.* Professor DANIELLS and Mr. HUTCHINS.

10a. Qualitative Analysis. For students in Pharmacy. *Daily during the first half of the second semester.* Professor DANIELLS and Mr. BRANDEL.

12. Analytical Chemistry for Engineers. *Two-fifths study for sophomore year. First semester,* qualitative analysis. *Second semester,* quantitative analysis. Professor DANIELLS and Mr. HUTCHINS.

15. Quantitative Analysis for Students in Pharmacy. *Daily during the second half of the second semester.* Professor DANIELLS and Mr. BRANDEL.

20. Organic Chemistry. Lectures and laboratory work. *Full study throughout the year.* In the first semester the work will be chiefly on the elements of organic chemistry. Lectures, *M., W., F., with one recitation and four hours lab-*

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oratory work a week. In the second semester the work will be chiefly on aromatic compounds. As special topics unsaturated compounds and carbohydrates will be presented. A part of the laboratory time may be given to ultimate analysis. *Lectures Tu., Th., with one recitation and six hours laboratory work.* Assistant Professor HILLYER.

20b. Organic Chemistry for Pharmacy Students. *Two-fifths course in the second semester.* Recitations and laboratory work. Assistant Professor HILLYER and Mr. BRANDEL.

40. Advanced Chemistry. This course is especially designed for pharmacy students; the first semester being devoted to inorganic, the second to organic chemistry. Course 1 is a prerequisite. *Full study throughout the year. Lectures and recitations Tu., Th., F., at* 10. Professor KREMERS and Mr. BRANDEL.

41. Plant Chemistry. As a three-fifths study supplementary to Pharmacognosy 2b. *Recitation, M., at* 9.

45. Alkaloid Assay. One-fifth required of students in the pharmacy course during the second semester. Additional work may be elected upon consultation. Assistant Professor FISCHER.

50. Assaying. A course in practical assaying. *Second semester; hours to be arranged.* Assistant Professor LENHER and Mr. TIBBALS.

For Undergraduates and Graduates.

4. Chemical Preparations. Laboratory course in the preparation of typical inorganic compounds. Assistant Professor LENHER.

5. Research Work in Inorganic Chemistry. This course is designed for students who desire to prepare a thesis in chemistry, and for candidates for a higher degree. Assistant Professor LENHER.

11. Analytical Chemistry. Quantitative. *Daily throughout the year with weekly lectures and class exercises.* The laboratory is open all day. Hours may be arranged on consultation. Professor DANIELLS and Mr. HUTCHINS.

13. Quantitative Chemical Analysis for Engineers; continuation of course 11. *Three-fifths study throughout the junior year.* The analysis of metals, ores, minerals, and economic products. Professor DANIELLS and Mr. HUTCHINS.

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14. Water Analysis for Students in Sanitary Engineering. *Five-fifths study during the second semester.* Professor DANIELLS.

16. Toxicology, Urine Analysis, and Sanitary Water Analysis. *Second semester, daily.* Open only to those who have taken at least one semester of quantitative analysis. Professor DANIELLS

21. Study of Methods of Preparation of Organic Compounds. Lectures and recitations twice a week with laboratory work. *Full study during the first semester.* Assistant Professor HILLYER.

22. Research in Organic Chemistry. Students desiring to become acquainted with the methods of research in organic chemistry may take work leading to senior theses or to theses for higher degrees. Assistant Professor HILLYER.

23. Seminary in Organic Chemistry. Advanced students meet weekly to report on assigned topics bearing on some phase of the literature of the great researches in organic chemistry or on the lives of the men who have contributed to its advancement. Assistant Professor HILLYER.

24. Electrolysis and Electrosynthesis of Organic Compounds. Conferences once a week, with laboratory work. *Three-fifths study during the second semester.* Assistant Professor HILLYER.

25. Organic Nitrogen Derivatives. Lectures and recitations in the study of the synthetic and natural alkaloids, uric acid, the ptomaines, and the organic dye stuffs. *Three-fifths study during the second semester.* Assistant Professor HILLYER.

30. General Course in Physical Chemistry. Lectures and recitations supplemented by laboratory exercises in physico-chemical measurements. This course must be preceded by course 1 in chemistry. *Full study throughout the year.* Lectures and recitations. *First semester, Tu., Th., at* 8; *second semester, W., F., at* 8. Professor KAHLENBERG and Mr. SHINN.

31. Electrochemistry. Lectures and recitations twice a week. Laboratory work in electrochemical measurements supplements the lectures, and with them makes a full study. *Lectures during the first semester; laboratory work throughout the year.* Professor KAHLENBERG and Mr. SHINN.

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32. Thermal Chemistry. *Lectures M. at* 8; *and one period of three hours of laboratory work a week; second semester.* Professor KAHLENBERG.

33. Special Laboratory Course in Physical Chemistry. This course is for seniors in engineering who desire an acquaintance with the methods of physico-chemical measurement. *Full study during the first semester; hours to be arranged.* Professor KAHLENBERG.

42. Plant Chemistry. Supplementary to plant physiology; a full study is offered to botanical students. *Lectures and recitations, Tu., Th., at* 4. Professor KREMERS and Mr. RABAK.

46. Adulteration of Food Stuffs. A chemical study which may be supplemented by course 16b in botany. Assistant Professor FISCHER.

47. Research Work. Special subjects for senior theses or graduate work on the chemistry of volatile oils, of alkaloids and on other subjects pertaining to pharmacy. Work will be arranged upon consultation. Professor KREMERS, Assistant Professor FISCHER, and Mr. BRANDEL.

Primarily for Graduates.

6. Advanced Inorganic Chemistry. A course in advanced inorganic chemistry, special attention being given to the discussion of modern theories of chemistry. Lectures and laboratory work. Assistant Professor LENHER.

35. Advanced Physical Chemistry. Lectures on selected topics. *Second semester; Th., at* 8. In 1905 the lectures will be on the subject of solutions. Professor KAHLENBERG.

36. Research Work in Physical Chemistry. Students having sufficient training may take up research work in physical chemistry, to which special importance is attached and for which every facility is furnished. This course is especially designed for seniors who desire to prepare a thesis and for graduates seeking higher degrees. *Full study throughout the year; hours to be arranged.* Professor KAHLENBERG.

37. Seminary in Physical Chemistry. Original articles of importance will be studied in detail, with a view to broaden and deepen the understanding and to act as a stimulus to further research. *At least once a week throughout the year.* Professor KAHLENBERG.

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43. Chemistry of the Volatile Oils, including their botanical relation and assay. Work arranged upon consultation with the instructor. Professor KREMERS.

44. Chemistry of Alkaloids and their Assay. General survey course of the chemistry of alkaloids. *One lecture per week during the second semester.* Assistant Professor FISCHER.

GEOLOGY AND MINERALOGY.

PROFESSORS HOBBS, LEITH, AND FENNEMAN, AND MR. BALL.

For students who wish to take a general educational course in geology, no definite pre-requisites are specified. It is, however, desirable that physics and chemistry be taken first. Students who have not had these sciences in college are advised to begin geology with course 8 (physical geography). Students below the junior year who have not had physics, chemistry, or physical geography, are not admitted to course 1 (general geology). Juniors and seniors in like circumstances should consult with the professor in charge. All who have had physical geography in the University are allowed to take the general geology without other pre-requisites. For all those who make geology a major study, physics and chemistry are pre-requisites, and mineralogy should be taken either before or along with the study of general geology.

Courses 11 to 21 are advanced courses, adapted for graduate students or for students who have had at least one full year of geology and mineralogy. The courses selected for the year depend upon the needs of the advanced students. During 1904-05 courses 11, 12, 13, 15, 18, 19, 20, and 21 will be offered.

President Van Hise, while offering no courses, remains the head of the department of geology, and will continue to initiate and direct research work of the advanced students. He will also lecture from time to time on subjects related to the work of the department.

Primarily for Undergraduates.

1. General Geology. This course aims to give, (1), a clear understanding of the forces which are now modifying the earth's crust and which have brought it to its present condition, and (2), enough of structural, physiographic and

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historical geology, and of minerals, rocks and fossils, to show the student the nature of the field covered by geological study. Excursions are made to points in the vicinity, including the Baraboo ranges and the Dells of the Wisconsin river, where geologic forces and forms are well illustrated. *Five-fifths, first semester,* at 12. Professor FENNEMAN.

2. Historical Geology. Chiefly the history and stratigraphy of the North American continent, supplementing the brief account given in general geology. Lectures and textbook study; laboratory exercises with maps and sections, and with typical sets of fossils. *Five-fifths, first half of second* 2 *to* 6, *Sat.*, 9 *to* 1 *and* 2 *to* 6. Professor FENNEMAN.
3. Field Geology. Study of selected areas adjacent to Madison. This course may be taken by students having had courses 1 and 2. *Five-fifths, for last half of second semester. F.*, 2-6, *Sat.*, 9-1, *and* 2-6. Professor FENNEMAN.
4. Physical Geography. This course covers in a more technical way the customary field of physical geography, assuming, however, that the student is familiar with the subject as studied in high schools. Davis' *Physical Geography* is used as a text and supplemented by lectures and laboratory work. The study of land forms as seen in the field near Madison forms a part of the work. *Three-fifths, first semester; M., W., F., at* 10. Professor FENNEMAN.
5. Physiography of the United States. This course presupposes a knowledge of physical geography. The United States is divided into regions on the basis of topography and geological history. Each region is studied separately. The several topographies, soils, climates, mineral and other resources are treated in their physical relations and as conditions affecting habitation. *Three-fifths for second semester; M., W., F.,* 10 *to* 11. Professor FENNEMAN.
6. General Course in Mineralogy. Prerequisite, a general course in chemistry. Trigonometry should be taken if possible. *First semester; M., Tu., W., Th., F., at* 11. *Second semester; M., Tu., W., Th., F., (a) at* 11; *(b) after Easter at* 11 *to* 1. Professor HOBBS.
7. Short Course in Mineralogy. This course is required of civil engineers in their sophomore year. Professor HOBBS.

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For Undergraduates and Graduates.

8. Optical Mineralogy. Lectures, quizzes, and laboratory work with the polarizing microscope. A prerequisite to petrology. *First semester; M., W., F.*, 9 *to* 11. Professor HOBBS.

9. Field Petrology. The characteristics or rocks and their geological field classification. *Second semester; Tu., Th.*, 9 *to* 11. Professor HOBBS.

10. Microscopic Petrology. The study of rocks as mineral aggregates with the aid of the petrographical microscope. Course 9 is a prerequisite to this course. *Second semester; M., W., F.*, 9 *to* 11. Professor HOBBS.

11. Economic Geology (Metallic). Emphasis is placed on the occurrence, origin, and development of metallic minerals, involving a summary of the principles of metamorphism and ore deposits given in course 15. Excursions may be taken to the iron, copper, lead, and zinc districts accessible from Madison. Chemistry 1, mineralogy 1, and geology 1, 2, and 3, are prerequisites for this course. *Three-fifths study first semester and first half of second semester.* Professor LEITH.

12. Economic Geology (Non-metallic). This course includes a study of water, building materials (of mineral origin), soils, coal, petroleum, natural gas, and minor non-metallic mineral products. These subjects are considered with reference to origin, geological relations, areal distribution (chiefly in the United States) and exploitation. Illustrations of most of the subjects are found within the field accessible to the class. Prerequisites the same as for course 10. *Five-fifths study for second half of second semester, to follow course* 10. Professor LEITH.

13. Introductory Paleontology. A study of the fossil forms of those invertebrates which are most important in geological history. The course aims to give familiarity with the forms at sight and a knowledge of their relationships and significance in geological work. Geology 1 is prerequisite. The length of the course and time of offering it are determined by the needs of students in the department.

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Primarily for Graduates.

14. Principles of Structural Geology. The behavior of rocks under fracture and flowage, requiring the discussion of joints, folds, and cleavage, from field, experimental and mathematical standpoints. For this course there is accessible an unequalled collection of specimens and slides illustrating structural features belonging to the pre-Cambrian and Metamorphic Division of the U. S. Geological Survey. *Lectures and laboratory work. Three-fifths study throughout the year.* Professor LEITH.

15. Principles of Metamorphism and their application to the Deposition of Ores. The course is based largely on an exhaustive monograph on this subject by President Van Hise. *Lectures and laboratory work. Three-fifths study throughout the year. Hours to be arranged.* Professor LEITH.

16. Principles of Pre-Cambrian Geology. This course treats of the pre-Cambrian stratigraphy of North America and with the problems of correlation, structure, and metamorphism to be met in the study of the ancient crystalline rocks. U. S. Geological Survey specimens and slides from all the principal pre-Cambrian rocks of North America are available for study. *Three-fifths study throughout the year.* (Omitted in 1904-05.) Professor LEITH.

17. Lake Superior Geology. Because of their vast stores of iron and copper, the pre-Cambrian rocks of the Lake Superior region have been investigated in great detail by the U. S. Geological Survey, and the stratigraphy, structure and metamorphism of these ancient crystalline rocks have been worked out so fully that the region has come to be regarded as a classical one in pre-Cambrian study, and the principles and facts there developed are largely applied in the study of pre-Cambrian areas of other parts of North America. The U. S. Geological Survey Monographs on the Lake Superior region are used as texts and the original specimens, slides, and charts described in the monographs are at the disposal of the students. At the close of the course in the spring, an excursion is made to points of geologic and economic interest in the Lake Superior country. *Three-fifths study throughout the year.* (Omitted in 1904-05.) Professor LEITH.

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18. Advanced Petrology. Prerequisite to this course is course 10 in petrology. This work leads directly to and often constitutes thesis work for higher degrees. *Credit given on work done.* Professor HOBBS.
19. Advanced Crystallography. Mineralogy (course 6) is a prerequisite. *Hours to be arranged.* Professor HOBBS.
20. Areal Physiography. The study of assigned areas, their physiographic histories, boundary lines, classification and subdivision. The work of this course is research in line with the general outline furnished by course 5. *Credit given for work done.* Professor FENNEMAN.
21. Research work is offered by the members of the department in their respective lines. Also President Van Hise will assist in the direction of research work related to his investigations. *This is a full or double study running through the year.*
22. Geological Seminary. Subjects under investigation by the members and students of the department and reviews of important publications are discussed. *One hour per week.*

BIOLOGY.

PROFESSOR BIRGE, PROFESSOR HARPER, ASSISTANT PROFESSOR MILLER, ASSISTANT PROFESSOR MARSHALL, DR. B. M. ALLEN, DR. SCHMITTER, MR. DENNISTON, MR. WAGNER, MR. C. E. ALLEN, MR. MARQUETTE, MISS SHERMAN, MR. CHRISTMAN, MR. SWINGLE, AND MISS NICHOLS.

Primarily for Undergraduates.

1. General Biology. Introductory to both botany and zoology, and required as preliminary to all advanced work in either department. Two recitations or lectures and eight hours' laboratory work a week.

   Lectures, M., W., at 3. Professor HARPER and Professor BIRGE. For laboratory work the class is divided into two or three sections, each meeting for two hours daily. Assistant Professor MARSHALL, Mr. ALLEN, Mr. WAGNER, Miss SHERMAN, and Mr. CHRISTMAN. Quiz divisions are also required to meet once each week.

   The first semester is devoted to a study of the general principles of biology as illustrated by plants. The second semester is given to zoology. Students can enter the course in either semester.

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ZOOLOGY.

For Undergraduates and Graduates.

2. Invertebrate Zoology. A general course in the morphology and classification of invertebrates. *Throughout the year, 2 to 4.* Professor BIRGE.

3. Human Physiology. A. Nutrition, respiration, excretion. *First semester; M., W., F., at 8.* B. Motion, nervous system, and sense organs. *Second semester; Tu., Th., at 8.* Textbook, Martin's *The Human Body.* Professor BIRGE.

12. Entomology. A general course in the anatomy, embryology, and classification of insects, with special attention to forms of economic importance. *Full study; first semester.* Assistant Professor MARSHALL.

12a. Lectures. *Twice a week.* Assistant Professor MARSHALL.

12b. Laboratory Work. *Six hours a week.* Assistant Professor MARSHALL.

These may be taken together as a full study, or separately. Advanced work on special subjects can be arranged.

13. Invertebrate Embryology. The segmentation of the egg, the formation of the gastrula and the leading types of metamorphosis in various groups of invertebrates. *Three-fifths; second semester.* Assistant Professor MARSHALL.

13a. Animal Behavior. A discussion of the reaction of animals to stimuli, with special reference to recent researches. Lectures. *First semester; W., F., at 11.* Mr. WAGNER.

Primarily for Graduates.

14. Research Courses in the Study of Plankton and Invertebrate Zoology. For senior theses, and graduates. Group students in zoology may take their major subject in invertebrate zoology, following courses 1 and 3 by 10. Professor BIRGE and Assistant Professor MARSHALL.

Students can take a major line of study in either invertebrate or vertebrate zoology. Persons intending to teach zoology in high schools should take at least course 3 in addition to course 1.

Summer Courses in Zoology. See announcement of Summer Session on later pages.

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ANATOMY.

For Undergraduates and Graduates.

4. Vertebrate Anatomy. Laboratory work and lectures. *First semester:* dissection of the lower types of vertebrates; *second semester:* mammalian anatomy, using the cat as the type. Course 2 is designed not only for those who intend to study medicine, but also for those who are fitting themselves for teaching. *Throughout the year*, 11 *to* 1. Dr. B. M. ALLEN.
5. Vertebrate Histology. Laboratory work and lectures. This course should be preceded by course 2. *Full study; first semester*, 9 *to* 11. Assistant Professor MILLER.
6. Vertebrate Embryology. This course follows course 5. The development of the frog, chick, and pig is studied. Laboratory work and lectures. *Full study; second semester*, 9 *to* 11. Assistant Professor MILLER.
7. Problems of Vertebrate Embryology. This course involves a study of: (a) The development, structure and physiological relations of the sex-cells; (b) Early stages in the development of the embryo under normal and experimental conditions. Current theories of inheritance and regeneration will be discussed. *Second semester; three-fifths study.* Dr. B. M. ALLEN.
8. Advanced Work in Histology and Embryology. This course is open to graduate students and such undergraduate students as may wish to carry on their work along special lines. Courses 2, 5, and 6 are prerequisites. Assistant Professor MILLER and Dr. B. M. ALLEN.
9. Neurology. This course is open to such students as have had courses 2, 5, and 6. The work consists of dissection of the sheep's brain and the human brain, gross and microscopic anatomy of the central nervous system and sense organs, with such lectures as are necessary for the elucidation of the subject. *Second semester; full study.* Assistant Professor MILLER.
10. Human Anatomy. During the present year the following courses have been given. For seniors and graduates.

    Human Osteology. A systematic study of the human skeleton. Each student is furnished with a complete skeleton and has the use of both articulated and disarticulated skulls. Dr. SCHMITTER.

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Dissection. A group of five students is assigned to each cadaver, and each student has the opportunity of dissecting an arm, a leg, the thorax, the abdomen, and the head. For the study of ligaments a complete set of preparations by Tramond is provided. *Throughout the year; full study.* Assistant Professor MILLER and Dr. SCHMITTER.

11. Thesis work in Vertebrate Anatomy, Histology, or Embryology. Students who make the course in vertebrate anatomy their major study will take course 2 in the sophomore year, and courses 5 and 6 in their junior year, leaving the senior year free for thesis work. The subject of the thesis should be selected during the junior year, and the preliminary work begun. Assistant Professor MILLER, and Dr. B. M. ALLEN.

Summer courses in Mammalian Anatomy and Histology. See announcement of Summer Session.

BOTANY.

For Undergraduates and Graduates.

15a. Plant Morphology. Course 1 is a prerequisite to this course. Algæ and fungi. The morphology of types of the principal groups will be studied in the laboratory. The lectures will give an outline of the development of the different series and their classification and will also discuss problems of research in connection with the different groups. *First semester; M., W., F., 2 to 4; Tu., Th., 2 to 3. Lectures Tu., Th., at 3.* Professor HARPER and Mr. SWINGLE.

15b. Plant Morphology. Liverworts, mosses, ferns, equisetum, and lycopods. A continuation of course 15a. *Two-fifths study during second semester; M., Tu., 2 to 4. Lecture Tu., at 3.* Professor HARPER and Mr. SWINGLE.

15c. Plant Morphology. The flowering plants. A study of the life histories of a few types of flowering plants, including the phenomena of pollination, fertilization, development of organs and tissues, and discussions of morphological homologies and allied development problems. *Second semester; through the year as desired by individual students. W., Th., F., 2 to 4.* Mr. ALLEN.

16a. Vegetable Histology. A systematic study of the tissues of phanerogams and ferns. Use of reagents and stains, sec-

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tion cutting, and mounting. Required of all students in pharmacy. *Three-fifths study, first semester.* Mr. DENNISTON and Miss SHERMAN.

16b. Microscopical Examination of Drugs and Food Products. The object of this course is to study and illustrate the methods of identifying powdered drugs and food products, and detecting adulterations. *Three-fifths study; second semester.* Mr. DENNISTON and Miss SHERMAN.

17. Physiology of the Flowering Plants. A laboratory course on the special physiology of the vascular plants. *Second semester; three-fifths study.* Professor HARPER.

18. Cytology. General physiology of organisms. Lectures and experimental work on the reproduction, irritability, and nutrition of the cell. Must be preceded by courses 15 or 16, and an ability to read German is desired. *Daily; hours on consultation.* Professor HARPER and Mr. MARQUETTE.

19. Mycology. Special work on the morphology and classification of the fungi is offered to advanced or graduate students. *Hours on consultation.* Professor HARPER.

20. Botanical Methods. Practice will be given in methods of preparing plant material and of growing various algæ and fungi for use in the class room. Opportunity will also be given for collecting and preserving material for laboratory courses. Open to students who have had courses 1 and 15. *Two-fifths study; second semester.* Professor HARPER and Mr. ALLEN.

21. Research Work. Students whose preparation is adequate may on consultation be assigned special subjects of investigation. Professor HARPER.

22. Morphology and Classification of the Flowering Plants. An elementary course designed primarily for pharmacy students, but open to others who desire to begin the study of botany. The life histories and ecology of seed plants, with a comparative study of the structure of the principal families and the identification of common species. Field work will be an important feature. Excursions on Saturdays. *M., Tu., W., Th., F.,* 8 *to* 10; *second semester.* Mr. ALLEN and Miss SHERMAN.

23. Native Trees. A study of the structure and characteristics of forest trees. Lectures, laboratory, and field work. Open

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to those who have had the equivalent of one semester's work in general botany. *Two-fifths study; second semester.* Mr. ALLEN.

24. Advanced Work in Anatomy. Special subjects for original investigation will be assigned to such students as are properly qualified, and who desire to do advanced work. Mr. DENNISTON.

25. Plant Pathology. A laboratory course on the diseases of plants. Especial attention is given to the methods of infection, effect on the host plant, etc., of the fungi which cause diseases of garden crops, cereal grains, etc. *Hours on consultation.* Professor HARPER.

26. Bryology. Special work on the morphology and classification of the bryophyta is offered to advanced or graduate students. Theis course must be preceded by courses 1 and 15, or their equivalent. *Hours on consultation.* Mr. ALLEN.

27. Diseases of Timber Trees. A special course of lectures and laboratory work on the diseases of economically important forest trees, and the causes of decay in timber used for building and other purposes. The lectures may be taken without the laboratory work. *Two-fifths study, second semester. Hours on consultation.* Mr. ALLEN.

28. Taxonomy of Spermatophyta and Pteridophyta. Special work in the morphology and classification of the seed-producing plants and ferns is offered to advanced or thesis students. Courses 1 and 2 or 3 or their equivalent are required as a prerequisite. Mr. DENNISTON.

29. Physiological Seminary. For the study of special subjects in general physiology, and for the presentation of the results of investigation. Professor HARPER.

31. Pharmacognosy. This course presents to the student the main facts of the natural history of drugs, and the plants producing them. Required of all students in pharmacy. Text book, Culbreth's *Materia Medica. Twice a week; second semester of the junior year and the first semester of the senior year.* Mr. DENNISTON.

33. Laboratory Work. For three-year or four-year pharmacy students. The course consists in a study of the microscopic structure and characteristics of further types of drugs. Required of all seniors. *Three-fifths study during the first semester of the senior year.* Mr. DENNISTON.

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35. This course will consist of recitations supplemented by laboratory work in the identification of drugs. The official and the most important non-official drugs will be studied. *One-fifth during the second semester of the junior year and the first semester of the senior year.* Mr. DENNISTON.

37. For Pre-Medical Students. An abridgement of the work given to pharmacy students is offered for those intending to study medicine. As far as may be, the methods used are those detailed for the foregoing courses. No drug collection is required and no microscopic study is expected. Two lectures and two hours' laboratory work per week. *Three-fifths during the first semester.*

38. Advanced Laboratory Work and Thesis, adapted to the individual. Mr. DENNISTON.

39. The Collection and Commerce of Crude Drugs. Laboratory and field work supplemented by lectures and recitations. *One-fifth during the first semester of the junior year.* Mr. DENNISTON.

Summer Courses in Botany. See announcement of the Summer Session on later pages.

BACTERIOLOGY AND HYGIENE.

PROFESSOR RUSSELL, ASSISTANT PROFESSOR FROST, AND MR. BARNARD.

Primarily for Undergraduates.

1. General Bacteriology. In this elementary course the bacteria are considered from a biological point of view. It is a prerequisite for specialization in applied lines, as medical, sanitary or agricultural bacteriology. *Lectures or equivalent; M., W., F., at* 11. *First semester. Full study.* Professor RUSSELL, Assistant Professor FROST, and Mr. BARNARD.

2. Medical Bacteriology. This course, which is especially designed for pre-medical students, considers the bacteria that are especially concerned in the production of disease processes. Course 1 is a prerequisite. *Lectures or equivalent; M., W., F., at* 11. *Full study, second semester.* Assistant Professor FROST and Mr. BARNARD.

3. Thesis Work in Bacteriology. Students who desire to select their theses in this department must take course 1 in their

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junior year or before, and select the subject for their thesis before the close of the junior year. Professor RUSSELL and Assistant Professor FROST.

6. Communicable Diseases: Their Cause and Prevention. Weekly lectures of a non-technical character. No previous work in science is required. *Second semester, one-fifth study.* Alternates with course 7. Assistant Professor FROST.
7. General Hygiene. This is a course of lectures dealing with the hygienic aspects of air, water, and food supplies, and the disposal of sewage. *Second semester; one-fifth study.* Alternates with course 6. (Omitted in 1904-05.) Assistant Professor FROST.
8. Biology of Water Supplies. *First semester, full study, lectures and laboratory work.* Required of juniors in sanitary engineering. Assistant Professor FROST.
9. Bacteriology for Students in Home Economics. This course will consist of lectures, recitations, and laboratory work. The bacteria will be studied in their relation to the home and its environments. The course includes work on the various fermentations and on the sanitary aspects of the subject. Course 1 is a prerequisite. *Three-fifths credit. Second semester.* Assistant Professor FROST.

For Undergraduates and Graduates.

4. Advanced Work in Bacteriology. Students who have had sufficient preliminary work (courses 1 and 2 or their equivalent) will be assigned special topics for study. Laboratory work and conferences. Professor RUSSELL and Assistant Professor FROST.
5. Research Work in Bacteriology. Opportunity is offered for work in original investigation which may be arranged for on consultation. A reading knowledge of French and German is necessary. Professor RUSSELL and Assistant Professor FROST.

For courses in dairy and agricultural bacteriology see announcement under College of Agriculture. The Bacteriological Journal Club meets bi-weekly for the review of current bacteriological literature.

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PHARMACY.

ASSISTANT PROFESSOR FISCHER AND MR. TWEEDEN.

Primarily for Undergraduates.

1. Laboratory Technique. The principles and practice of pharmaceutical operations, such as comminution, expression, decantation, filtration, maceration, percolation, diffusion, dialysis, crystallization, and precipitation. *Three-fifths during the junior year. W., F., at* 11. Mr. BRANDEL.
2. Pharmaceutical Technology. The study and manufacture of galenical and other preparations: waters, tinctures, fluid extracts, spirits, oleo-resins, etc.; also of pills, suppositories, ointments, plasters, etc. *Five-fifths during first semester of the senior year; Tu., Th., at* 11. Assistant Professor FISCHER and Mr. TWEEDEN.
3. Prescription Practice. The study of the prescription; practice in the compounding of physicians' prescriptions; also the study of physical, chemical, and therapeutical incompatibilities. *Four-fifths during second semester; Tu., Th., at* 11. Assistant Professor FISCHER and Mr. TWEEDEN.

10. The Economic Function of the State. This course consists of a series of weekly lectures, historical and critical, on the state in its relation to industry, trade, and the professions, with special reference to pharmacy. *First semester*, 1904-05. Professor MEYER.
11. Law Applied to Pharmacy. A course of lectures treating of the validity and construction of laws especially restraining the practice of pharmacy; of the liability of pharmacists, both criminal and civil; for their own violation of laws and that of their agents; also for their own negligence and that of their agents.
12. State Boards of Pharmacy. The development of state boards of pharmacy in the United States and their legal functions, with special reference to their duties as examining bodies.

HOME ECONOMICS.

PROFESSOR HUNT.

Primarily for Undergraduates.

1. House Sanitation. The site, surroundings, and construction of a dwelling house considered with reference to health. *First semester; three-fifths study.*

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2. House Decoration. The decorations and furnishings of a house considered with reference to beauty. *Second semester; one-fifth study.*
3. The Selection and Preparation of Foods. This course presents the economic aspect of the food problem. Lectures and laboratory work. *First semester; five-fifths study.* General chemistry is a prerequisite.
4. The Teaching of Domestic Science. Lectures on the place of home economics in the lower schools. Laboratory practice in arranging courses for such schools. Course 3 is a prerequisite. *Second semester; three-fifths study.*
5. Household Economy. The details of house management. *Second semester; two-fifths study.*
6. Dietetics. The physiological aspect of the food problem. Lectures and laboratory work. Course 3 and physiology are prerequisites. *First semester; three-fifths study.*
7. Home Economics. The home in its relation to society. *Second semester; two fifths study.* Courses 1, 2, 3, and 5 in this department, and economics 1 are prerequisites.

MUSIC.

PROFESSOR PARKER AND MR. BREDIN.

The courses in music, except course 1, are open as electives to students in any department of the University who show sufficient musical ability to pursue them with profit, and receive the same credit as similar courses in other departments of the University.

Course 1 is open to election in the freshman year by candidates for the degree of Bachelor of Arts, in addition to a minimum of fourteen hours, but does not count as a part of the required 120 hours.

For admission to course 1, no previous knowledge of music is required. Those desiring to take course 2 must be able to read and play simple four-part music. Course 1 will be found useful in strengthening preparation for the courses in harmony and counterpoint. Courses 1 and 2, or their equivalent, are required as a preparation for course 6. Students may take the lectures of the second semester of course 7 without having taken those of the first semester.

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Students may be admitted to advanced courses on examination.

Special students may substitute private lessons in piano playing or singing for one or more studies on recommendation of the Professor of Music, but without credit toward graduation, except as specified under course 8. See the statement of the School of Music on p. 266.

Classes meet in the lecture room, Music Hall.

Primarily for Undergraduates.

1. Musical Theory and Choral Practice. *Throughout the year; M., W., at* 5. Mr. BREDIN.
2. Elementary Harmony. *Throughout the year; Tu., Th., at* 4. Professor PARKER.
3. Advanced Harmony. *First semester; M., W., F., at* 11. Professor PARKER.
4. Counterpoint. *Second semester; M., W., F., at* 11. Professor PARKER.
5. Double Counterpoint and Fugue. *Throughout the year; M., W., F., at* 10, subject to change. Professor PARKER.
6. Musical Composition. *Twice a week throughout the year.* Professor PARKER.
7. History of Music. Lectures. *Throughout the year; Tu., Th., at* 3. Professor PARKER.
8. Advanced Piano Playing. Senior and junior years only. Hours and credit to be arranged with the instructor and Director of the School of Music, but not to exceed a total of five-fifths for one year.

   Students who desire to become connected with the University Military Band should confer with Mr. Nitschke.

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THE COURSE IN COMMERCE.

STAFF OF INSTRUCTION.

CHARLES R. VAN HISE, Ph. D., LL. D., President of the University.
W. A. SCOTT, Ph. D., Director, and Professor of Economic History and Theory.

T. S. ADAMS, Ph. D., Assistant Professor of Statistics and Economics.
*D. EARLE BURCHELL, Assistant Professor of Business Administration.
V. COFFIN, Ph. D., Assistant Professor of European History.
L. W. DOWLING, Ph. D., Assistant Professor of Mathematics.
N. M. FENNEMAN, Ph. D., Professor of Geology.
W. F. GIESE, A. M., Assistant Professor of Romance Languages.
H. B. LATHROP, A. B., Associate Professor of English Literature.
V. LEHNER, Ph. D., Assistant Professor of General and Theoretical Chemistry.
B. H. MEYER, Ph. D., Professor of the Institutes of Commerce.
E. B. SKINNER, Ph. D., Professor of Mathematics.
S. E. SPARLING, Ph. D., Assistant Professor of Political Science.
B. W. SNOW, Ph. D., Professor of Physics.
SUSAN A. STERLING, M. L., Assistant Professor of German.
C. A. VAN VELZER, Ph. D., Professor of Mathematics.
PHILIP ADAMS, B. A., Instructor in English.
FLORENCE E. ALLEN, M. L., Instructor in Mathematics.
ARTHUR BEATTY, Ph. D., Instructor in English.
W. G. BLEYER, M. L., Instructor in English.
A. C. L. BROWN, Ph. D., Instructor in English.
T. H. DICKINSON, M. A., Instructor in English.
C. H. HANDSCHIN, Ph. D., Instructor in German.
M. L. LORENZ, A. B., Assistant in Economics.
OTTO PATZER, B. L., Instructor in French.
U. B. PHILLIPS, Ph. D., Instructor in History.
E. C. L. C. ROEDDER, Ph. D., Instructor in German.
A. R. SEYMOUR, M. L., Instructor in French.

*Absent on leave during 1903-04.

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H. C. TAYLOR, Ph. D., Instructor in Commerce.
ELSBETH VEERHUSEN, Ph. D., Assistant in German.
H. G. A. BRAUER, Ph. D., Special Lecturer in Commercial Law.
STEPHEN M. GILMAN, Special Lecturer in Accounting and Auditing.

THE PURPOSE OF THE COURSE.

The purpose of this course is to supply facilities for the training of young men who desire to enter business careers, especially in such fields as domestic and foreign commerce and banking, or branches of the public service, like the consular, in which a knowledge of business is essential. It has been established in the belief that in order to achieve the largest measure of success at the present time, and in order properly to perform his duties to himself and to society, the business man needs not only a college education, but a course of study adapted to his peculiar needs. Justification for this belief may be found in the magnitude, complexity, and rapidly changing character of modern industrial processes, and in the unfitness of the traditional college course properly to equip a young man for the most efficient work in this field. The modern business man needs training of the highest order, combined with a knowledge of the mathematical, physical, and social sciences, and of their applications to commerce and industry, and a thorough command of his mother tongue and of at least one modern foreign language. Fortunately the development of historical, political, economic, and scientific studies in recent times, and improvement in our educational methods, has made possible the construction of a course of study which combines the necessary elements.

It is not the purpose of this course to graduate young men equipped with all the technical knowledge needed for the performance of the manifold processes of industry and commerce. It is well understood that such knowledge must be acquired by actual experience in connection with business institutions. It is our purpose, however, to give our students such training and such a knowledge of the structure and workings of the industrial organism as will enable them to learn the technique of any concern in much less time than would otherwise be required, and to attain a degree of industrial and social efficiency which is impossible for the average man who goes into business without such preliminary training.

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Requirements for Admission.

Students will be admitted to this course on compliance with the conditions imposed for entrance to the College of Letters and Science. (See p. 52.)

Persons twenty-one years of age, who are not candidates for a degree, and who wish to take special studies, are permitted to enter as adult special students upon giving satisfactory evidence that they are prepared to profit by the courses desired.

Students who have satisfied all the requirements for entrance, but do not wish to be candidates for the degree, will be admitted to any of the studies of this course for which they are properly prepared.

PLAN OF THE COURSE OF STUDY.

I.—STUDIES REQUIRED OF ALL.

These occupy the whole of the student's time in the freshman and sophomore years, about one-half of his time in the junior year, and considerably less than one-half of his time in the senior year.

With two exceptions the studies of the first two years are those which have long been considered as fundamental and necessary in a liberal education, namely: natural science, mathematics, English, foreign languages, history, and economics. The peculiarity of the course in these years consists in the selection made from the numerous studies available under these different heads. In natural science, physical geography and the physiography of the United States have been included because they are basal to commercial geography; in mathematics, algebra and its commercial applications have been selected because of their practical utility in various branches of industry and commerce; the course in English is the general training course required of all freshmen in the University; the foreign language courses devote special attention to the acquisition of a speaking and writing command of these languages, though the study of literature is by no means neglected; the course in history is selected both for its value as a training in the use of historical method, and because it aids in laying a proper foundation for various other courses; elementary economics and commercial geography are basal to a large number of courses in applied economics offered in the junior and senior years.

The required work of the junior and senior years includes continuation courses in the modern languages, money and banking, transportation, commercial law, and business administration. These

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are designed to complete the student's survey of the structure and workings of the modern industrial organism, to supplement the specialized studies of his elective group, to increase his breadth of vision, and to train him in the investigation and interpretation of the kinds of facts that he must deal with in after life. The course in business administration serves the additional purpose of testing the student's ability to perform the various duties for which he is being trained; for example, to carry on correspondence in English and the foreign language he is studying, to make the mathematical calculations required in the various business situations placed before him, to use business forms and papers, rate sheets, etc., to devise systems of accounting, and actually to keep the accounts of the various enterprises suggested; in short, to put to actual use the knowledge and the training derived from the courses he has been pursuing.

II.—ELECTIVE GROUPS.

These occupy from three to four hours per week during the junior and senior years, and furnish opportunity for a more thorough study of the various branches of commerce and industry. The following groups are at present available, and others may be arranged on consultation with the Director:

Banking and Finance.

Junior Year: Public Finance, 3; Money and Banking, continued, 3.

Senior Year: Corporation Finance and Securities and Thesis, 4; Seminary and Thesis, 4.

Transportation.

Junior Year: Statistics, 3; Railroad Legislation, 3.

Senior Year: Foreign Railways and Thesis, 4; Labor Legislation and Thesis, 4.

Manufacturing Industries.

Junior Year: Statistics, 3; Labor Legislation, 3.

Senior Year: Manufacturing Industries and Thesis,* 4.

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*In this course the historical development, and the economic and political relations of the chief manufacturing industries will be studied.

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The Consular Service.

Junior Year: Colonial Politics, 2; Contemporary Politics, 2; History of Diplomacy, 4.

Senior Year: International Law and Thesis, 4; Federal Services and Thesis, 4.

III.—FREE ELECTIVES.

From twenty-nine to thirty-seven semester hours are available for free electives. These may be chosen from any of the courses in the University which the student is fitted to enter, but it is expected that his choice will be guided by the desire to round out and broaden the course he has pursued.

ARRANGEMENT OF STUDIES.

FRESHMAN YEAR.

Physical Geography and Physiography of the United States, 3; German, French, or Spanish, 4; English, 3; Mathematics, 3; History, 3; Gymnastics and Drill.

SOPHOMORE YEAR.

Commercial Geography, 3; Foreign language (continued), 2, or Second Language, 4; Chemistry or Physics, 5; Elementary Economics (first semester), Money and Banking or Transportation (second semester),3; Free Electives, 2 or 0; Gymnastics, Drill, and Business Administration.

JUNIOR YEAR.

Foreign Language (continued), 2, or Second Language (if not taken in sophomore year), 4; Money and Banking or Transportation (the one not taken the second semester, sophomore year), first semester, 3; Elective Group, 3; Free Electives, first semester, 5 or 7, second semester, 8 or 10; Business Administration.

SENIOR YEAR.

Foreign Language (continued),2; Commercial Law, 3; Elective Group and Thesis, 4; Free Electives, 6; Business Administration.

DEPARTMENTS OF INSTRUCTION.

Political Economy.

For detailed information regarding these courses see p. 102.

1. The Elements of Economic Science. *Repeated each semester; M., W., F., at* 8, 9, *and* 10. Mr. LORENZ.

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3. Elements of Public Finance. *First semester; M., W., F., at* 9. Assistant Professor ADAMS.
5. The Elements of Money and Banking. *First semester; M., W., F., at* 8; *second semester at* 9. Professor SCOTT.
7. Economic Geography. *Throughout the year; M., W., F., at* 8 *and* 9. Dr. TAYLOR.
8. Business Administration. *Throughout three years; two hours per week.* Assistant Professor BURCHELL.
9. Commercial Law. Open only to juniors and seniors of suitable preparation. *Throughout the year; three times a week.*
18. Senior Seminaries. For thesis students. Professor MEYER, Professor SCOTT, Assistant Professor ADAMS, and Dr. TAYLOR.
25. Labor Legislation. *First semester; M., W., F., at* 10. Assistant Professor ADAMS.
28. Agricultural Industries. *Second semester; at hours to be arranged.* Dr. TAYLOR.
29. Manufacturing Industries. *First semester; at hours to be arranged.* Dr. TAYLOR.
30. Social Statistics. Two lectures and two hours' laboratory work a week, for which a credit of three-fifths is given. *First semester; Tu., Th., at* 12, *and M.,* 2 *to* 4. Assistant Professor ADAMS and Mr. LORENZ.
31. Economic Statistics. *Second semester; Tu., Th., at* 12, *and M.,* 2 *to* 4. Assistant Professor ADAMS and Mr. LORENZ.
33. Currency History. *Second semester; M., W., F., at* 8. Professor SCOTT.
34. Corporation Finance and Securities. Lectures and assigned reading. *First semester; Tu., Th., at* 12. Professor MEYER.
35. Transportation and Communication. *Repeated each semester; M., W., F., at* 9. Professor MEYER.
36. Special Problems in Transportation. *Second semester; Tu., Th., at* 9. Professor MEYER.
37. Foreign Systems of Railways. *Second semester; Tu., Th., at* 8. Professor MEYER.
38. Insurance. *First semester; Tu., Th., at* 11. Professor MEYER.

Political Science.

18. International Law. *First semester; M., W., F., at* 10. Professor PARKINSON.
20. Contemporary International Politics. *Second semester; M., W., F., at* 10. In connection with this course a series of

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public lectures on problems of international politics will be given. Professor REINSCH.

21. Colonial Politics. A study of the principal systems of colonial government. *First semester; M., W., F., at* 10. Professor REINSCH.

23. Federal Administration. A study of the organization and functions of the different branches of our federal service. *Second semester; Tu., Th., at* 9. Assistant Professor SPARLING.

History.

For detailed information see p. 96.

4. History of the United States. A general survey, with emphasis on political history. This course, or an equivalent, must precede all other courses in American history.

4a. To the Presidency of Jackson. *First semester, M., W., F., at* 11. Assistant Professor FISH.

4b. From the Presidency of Jackson to the present time. *Second semester; M., W., F., at* 11. Assistant Professor FISH.

5. English History. *Throughout the year; M., W., F., at* 9 *and* 11. Dr. SELLERY and Dr. TILTON.

7. History of Europe in the Nineteenth Century, 1815-1900. *Throughout the year; M., W., F., at* 11. Assistant Professor COFFIN.

15. Diplomatic History of the United States. *Throughout the year; Tu., Th., at* 10. Professor TURNER and Assistant Professor FISH.*

English.

For detailed information see p. 123.

1. Freshman English. English prose style. Composition. *Three hours per week throughout the year.* Mr. ADAMS, Mr. BLEYER, and Mr. DICKINSON.

2. Rhetoric and Composition. A continuation of course 1. *Tu., Th., at* 8. Professor LATHROP, Dr. BEATTY, and Dr. BROWN.

German.

For detailed information see p. 130.

2C. Modern Prose, narrative and dramatic, and one classical drama. *Throughout the year; M., Tu., W., F., at* 9. Assistant Professor ROEDDER.

*Given in 1904–05 by Assistant Professor Fish.

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3C. Reading, Conversation, and Composition. *Throughout the year; Tu., Th., at* 11. Miss VEERHUSEN.

4C. A continuation of the work of the preceding year, the texts being chosen chiefly to illustrate German history, political, cultural, and literary. *Tu., Th., at* 9. Assistant Professor STERLING.

5C. The work of this course will be of a strictly practical character, being devoted chiefly to oral and written work on topics connected with the actual demands of a commercial career. *Twice a week throughout the year.*

French.

For detailed information see p. 139.

4. Elementary Course. *Throughout the year; M., Tu., W., F., at* 9. Mr. PATZER.

17. Conversation, Composition, and Reading. *Throughout the year; Tu., Th., at* 11. Mr. PATZER.

18. Conversation, Commercial Correspondence, and Reading. *Twice a week throughout the year.* Mr. PATZER.

19. Conversation, Commercial Correspondence, and Reading. A continuation of course 18. *Twice a week throughout the year.* Mr. PATZER.

Spanish.

3. Elementary. Giese's *First Spanish Book*, and other easy prose. *Throughout the year; in two sections, M., Tu., W., F., at* 9 *and* 12. Mr. SEYMOUR.

4. Conversation, Composition, and Reading. In this course special attention is devoted to the vocabulary of everyday life. *Throughout the year; Tu., Th., at* 11. Mr. SEYMOUR.

5. Conversation, Commercial Correspondence, and Reading. In this course special attention is devoted to the vocabulary of commerce. *Throughout the year; M., W., at* 12. Assistant Professor GIESE.

6. Conversation, Commercial Correspondence, and Reading. Continuation of course 5. *Tu., Th., at* 10. Mr. SEYMOUR.
Mr. SEYMOUR.

Algebra.

1. Algebra. Quadratic equations, theory of indices, limits, arrangements and groups and progressions. *First semester; three times a week.* Professor VAN VELZER, Assistant Pro-

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fessor SKINNER, Assistant Professor DOWLING, and Miss ALLEN.

7. Applied Algebra. Logarithms, theory of probabilities, series, and the application of mathematics to insurance and finance. *Second semester; three times a week.* Assistant Professor DOWLING.

Physics.

1. General Lectures and Introductory Laboratory Practice. *Lectures; M., Tu., W., Th., at* 12. One recitation weekly at an hour to be arranged. *Laboratory practice twice a week.* Professor SNOW.

Chemistry.

7. General Chemistry. *Five hours a week throughout the year.* Assistant Professor LENHER and assistants.

Geology.

For detailed information see p. 155.

4. Physical Geography. *First semester; M., W., Th., at* 10. Professor FENNEMAN.
5. Physiography of the United States. *Second semester; M., W., Th.*, at 10. Professor FENNEMAN.

Graduate Students.

Graduates of this or other colleges and universities of good standing will be admitted to this course and arrangements will be made so that they may take its peculiar studies in two years, or in less time, provided they have already pursued some of them in their undergraduate courses.

Preparation of Teachers.

Students who wish to prepare themselves to teach commercial subjects in secondary schools will be aided in so arranging their elective work as to attain this end. Special facilities for pedagogical practice will be given such students in connection with the course in business administration, and work in addition to that prescribed may be arranged in commercial geography and economic history.

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Special Lecturers.

A number of special lectures are provided each year for the purpose of acquainting students with present business conditions and opportunities. So far as possible, men representing the chief business enterprises of the United States are secured for this purpose.

Requirements for Graduation.

Students who have successfully completed the above course of study will be admitted to graduation and will receive the degree of Bachelor of Arts.

Charges and Fees.

All fees are required to be paid strictly in advance at the beginning of each semester before cards are issued by the class adviser entitling the student to admission to classes.

Tuition is free for all students from the State of Wisconsin.

After ten days from the beginning of each semester no fees are returned except by special vote of the Regents.

Tuition for non-resident students, per semester..... $15.00
Incidental fee for all students, per semester..... 10.00

Communications regarding this Course should be addressed to W. D. Hiestand, Registrar, or to William A. Scott, Director.

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THE COURSE IN PHARMACY.

STAFF OF INSTRUCTION.

CHARLES R. VAN HISE, Ph. D., LL. D., President of the University.
E. A. BIRGE, Ph. D., Dean of the College of Letters and Science.
E. KREMERS, Ph. G., Ph. D., Director, and Professor of Pharmaceutical Chemistry.

W. W. DANIELLS, M. S., Sc. D., Professor of Chemistry.
RICHARD FISCHER, Ph. G., Ph. D., Assistant Professor of the Theory and Practice of Pharmacy.
W. D. FROST, Ph. D., Assistant Professor of Bacteriology.
R. A. HARPER, Ph. D., Professor of Botany.
H. W. HILLYER, Ph. D., Assistant Professor of Organic Chemistry.
L. KAHLENBERG, Ph. D., Professor of Physical Chemistry.
V. LENHER, Ph. D., Assistant Professor of General and Theoretical Chemistry.
B. H. MEYER, Ph. D., Professor of Institutes of Commerce.
B. W. SNOW, Ph. D., Professor of Physics.
C. A. VAN VELZER, Ph. D., Professor of Mathematics.
C. E. ALLEN, B. S., Instructor in Botany.
I. W. BRANDEL, Ph. G., M. S., Instructor in Pharmaceutical Technique.
R. H. DENNISTON, Ph. G., B. S., Instructor in Pharmaceutical Botany, and Curator of the Drug Cabinet.
E. B. HUTCHINS, M. S., Assistant in Analytical Chemistry.
H. B. NORTH, Ph. G., Student Assistant in Chemistry.
H. E. PATTEN, Ph. D., Instructor in Chemistry.
F. RABAK, Ph. G., Laboratory Assistant in Pharmacognosy.
H. SHERMAN, B. S., Laboratory Assistant in Botany.
M. E. TWEEDEN, Ph. G., Assistant in Practical Pharmacy.

General Statement.

The prime object of the Course in Pharmacy is to furnish a thoroughly scientific foundation for the pursuit of the profession of pharmacy. The elements of the fundamental natural sciences, chemistry, botany, or biology, and physics must first be studied before their application to pharmacy can rationally be considered.

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This is as true for pharmacy as for any other applied science or art. In pursuing these general studies the pharmacy students have the advantage of close association with students from other courses. This implies that in these studies they must be able to keep abreast with students who are graduates of accredited high schools. The best preparation for college, therefore, which the prospective pharmacy student should seek is not that of the shops, but that of a good high school or academy of like rank. The University does not demand practical experience for admission to the courses in pharmacy, but desires such preparation as will best fit for college or university work.

The general study of these fundamental sciences is followed by more or less specialized courses. General chemistry, inorganic and organic, qualitative and quantitative analysis, are followed by pharmaceutical chemistry and applied chemical analysis; general botany by vegetable histology and anatomy of drugs; general physics by pharmaceutical technique. These somewhat specialized studies, in turn, not only lay the foundation for the study of the more strictly applied courses in practical pharmacy and pharmacognosy, but also prepare the student for thesis work.

The student who can spend only two years at the University is compelled to take up the more technical studies of his course before he has laid a satisfactory foundation. Such a compromise is outlined under the caption, Courses of Study. The three-year student, as a rule, finds time to pursue other studies besides those outlined above, *e. g.*, German, physiology, or bacteriology, etc. The four-year student has the great advantage of supplementing his high school preparation during the freshman and sophomore years by acquiring a reading knowledge of German and French, and by the study of university mathematics, all of which studies are of the greatest importance when the more advanced work of the natural sciences is taken up during the junior and senior years.

Special attention is called to the four-years' course offered to graduates of accredited high schools. The course was created in order to accommodate those students who desire to obtain a general scientific education and to include in their course the pharmaceutical studies, and with the hope of stimulating a broader pharmaceutical education. For the more applied courses special laboratories have been equipped.

Like the sister profession, medicine, pharmacy is in need, not only of the general practitioner, but also of the specialist. To

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meet the demands of such, the University offers graduate courses. Graduates who desire to prepare themselves as chemists for manufacturing establishments, as analytic or sanitary chemists, or as bacteriologists, will find that the graduate work in the Course in Pharmacy, as well as the other departments of the University, offers excellent opportunities for advanced and more specialized study. Special lines of research can also be pursued in various departments by those who desire to work for a higher degree. The attention of advanced students is especially called to the graduate work outlined on page 299.

Laboratories.

A description of the general physical, chemical, and biological laboratories will be found on pp. 38-39; of the mineralogical laboratory on p. 39; of the assay laboratory on p. 200; of the bacteriological laboratory on p. 41; of the electrochemical laboratory on p. 198. The special laboratories for pharmacy students are located in North Hall.

PHARMACEUTICAL CHEMICAL LABORATORY. This laboratory affords ample accommodation to the advanced students. Every student is assigned a desk which he alone uses. In addition to the apparatus assigned to individual students, the laboratory is supplied with a large still and an extraction apparatus, both operated with steam from the central heating plant; furnaces for destructive distillation, combustion furnaces, and other apparatus necessary for advanced work. The balance room is well equipped with Becker's, Sartorius', Eimer & Amends', Nemetz's, Troemner's, and Bunge's balances, a torsion balance, etc. The dark chamber is supplied with a Laurent's polariscope and a Pulfrich's refractometer.

LABORATORY FOR PRACTICAL PHARMACY AND DISPENSARY. A laboratory has been equipped for individual rather than class instruction in practical pharmacy. It is well furnished with balances, percolation stands, extraction apparatus, water motors, prescription case, and all apparatus necessary in a complete laboratory of this kind. In the basement a room has been fitted to serve as comminution room, equipped with an electric motor, drug mills, mortars, tablet machines, centrifugal machine, ointment mill, mixing and sifting apparatus, etc.

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Collections.

The collections of the University, including the drug cabinet, are described on pp. 41-44.

Libraries.

For a statement as to general library facilities at the University in the city of Madison, see p. 35. The department library for ready reference is unusually supplied with reference works and the best periodicals. The other department libraries, as well as the general library, are all on the same campus and, therefore, easy of access.

TERMS OF ADMISSION.

The requirements for admission to the several colleges of the University are described on p. 54.

The special requirements for admission to the two-years' pharmacy course are herewith repeated.

I. Graduates from high schools are admitted without examination and without practical experience in a drug store.

II. Non-graduates are admitted if they comply with the following requirements:—

1. They must be at least eighteen years of age.

2. They must present satisfactory certificates of *at least* one year's attendance from some standard high school, or its equivalent from a similar educational institution.

3. The time intervening between the secondary education and the college course should have been spent in a drug store, where physician's prescriptions are regularly compounded.

Degrees.

The degrees given by the several colleges are described on p. 77. The first degrees given in pharmacy are that of *Graduate in Pharmacy* upon completion of the two-years' course, and that of *Bachelor of Science* (Pharmacy Course), conferred upon candidates who have successfully met the requirements of the four-years' course.

The advanced degrees are *Master of Pharmacy*, conferred upon graduates in pharmacy; and of *Master of Science* and *Doctor of Philosophy*, conferred upon candidates who have a bachelor's degree. See page 307.

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The Louis Lotz Scholarship.

Mr. Louis Lotz of Milwaukee has established a pharmaceutical scholarship on a financial basis of $50.00 per annum.

Fees and Expenses.

For tuition fees see p. 72; for laboratory fees, p. 74. An estimate of expenses for board and lodging will be found on p. 76.

COURSES OF STUDY.

Two Years' Course.

FIRST YEAR. FIRST SEMESTER.

Chemistry 3*. General chemistry for pharmacy students. The laboratory work accompanying this course is especially designed for pharmacy students. Eight-fifths. Assistant Professor LENHER and Mr. BRANDEL.

Biology 1. General biology. Introductory to both botany and zoology, and required as preliminary to all work in either department. *Two recitations, or lectures, and eight hours' laboratory work a week.* Professor HARPER, Mr. ALLEN, and Miss SHERMAN.

Biology 39. The collection and commerce of crude drugs. Laboratory and field work supplemented by lectures and recitations. One-fifth. Mr. DENNISTON.

Pharmacy 1. Laboratory technique. The principles and practice of pharmaceutical operations, such as comminution, expression, decantation, filtration, maceration, percolation, diffusion, dialysis, crystallization and precipitation. Three-fifths. *W., F., at* 11. Mr. BRANDEL.

FIRST YEAR. SECOND SEMESTER.

Chemistry 3. General chemistry continued as a three-fifths study. (See above).

Chemistry 13a. Qualitative analysis. First half of semester, daily. Professor DANIELLS and Mr. BRANDEL.

Chemistry 13b. Quantitative analysis. Second half of semester, daily. Professor DANIELLS and Mr. BRANDEL.

Chemistry 20b. Organic chemistry for pharmacy students. Two-fifths course. Recitations and laboratory work. Assistant Professor HILLYER and Mr. BRANDEL.

*The figures refer to the numbers of the courses as given in the statements under Departments of Instruction.

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Biology 22. Morphology and classification of the flowering plants. An elementary course designed primarily for pharmacy students. The life histories and ecology of seed plants, with a comparative study of the structure of the principal families and the identification of common species. Field work will be an important feature. Excursions on Saturdays. *M., Tu., W., Th., F.*, 8 *to* 10. Mr. ALLEN and Miss SHERMAN.

Pharmacy 1. Laboratory technique. Continuation of the work of the first semester. (See above).

SECOND YEAR. FIRST SEMESTER.

Chemistry 43. Advanced chemistry. This course is especially designed for pharmacy students, the first semester being devoted to inorganic chemistry. Lectures and recitations, *Tu., Th., F., at* 10. Professor KREMERS and Mr. BRANDEL.

Chemistry 44a. Plant chemistry. As a three-fifths study supplementary to pharmacognosy. Recitation, *Mon., at* 9. Professor KREMERS and Mr. RABAK.

Biology 16a. Vegetable histology. A systematic study of the tissues of the phanerogams and ferns. Use of reagents and stains, section cutting and mounting. Mr. DENNISTON.

Biology 31. Pharmacognosy. This course presents to the student the main facts of the natural history of drugs, and the plants producing them. Two recitations a week the second semester of the junior year and the first semester of the senior year. Text book, Culbreth's Materia Medica, 3d edition. Mr. DENNISTON.

Pharmacy 2. Pharmaceutical technology. The study and manufacture of galonical and other preparations: waters, tinctures, fluid extracts, spirits, oleo-resins, etc.; also of pills, suppositories, ointments, plasters, etc. Five-fifths. *Tu., Th., at* 11. Assistant Professor FISCHER and Mr. TWEEDEN.

SECOND YEAR. SECOND SEMESTER.

Chemistry 43. Advanced chemistry, organic. Continuation of the first semester's work.

Chemistry 46b. Alkaloidal assay. A one-fifth study. Assistant Professor FISCHER.

Biology 16b. Microscopical examination of drugs and food products. The object of this course is to study and illustrate the methods of identifying powdered drugs and food products and

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detecting adulterations. Three-fifths study. Mr. DENNISTON and Miss SHERMAN.

Biology 31. Pharmacognosy. Continuation of first semester's work.

Pharmacy 3. Prescription practice. The study of the prescription; practice in the compounding of physicians' prescriptions; also the study of physical, chemical and therapeutical incompatibilities. Four-fifths. *Tu., Th., at* 11. Assistant Professor FISCHER and Mr. TWEEDEN.

Pharmacy 10. The economic functions of the state. This course consists of a series of weekly lectures, historical and critical, on the state in its relation to industry, trade, and the professions, with special reference to pharmacy. First semester, 1904-05. Professor MEYER.

Pharmacy 11. Law applied to pharmacy. A course of lectures treating of the validity and construction of laws especially restraining the practice of pharmacy; of the liability of pharmacists both criminal and civil; for their own violations of laws and that of their agents; also for their own negligence and that of their agents.

Pharmacy 12. State boards of pharmacy. The development of state boards of pharmacy in the United States and their legal functions, with special reference to their duties as examining bodies.

Pharmacy 13. Special lectures by pharmaceutical practitioners and others.

Four Years' Course.

Students who desire to include pharmaceutical studies as a part of their general college education will have to elect the prerequisite studies enumerated below to accomplish this end. Such a course, if to lead to the degree of Bachelor of Science (Pharmacy Course) must include courses 1, 2, and 3 in pharmacy and course 31 in biology.

Basal sciences: chemistry 1, biology 1, physics 1. These should be taken during the first and second years.

Advanced sciences: chemistry 43 and biology 16a. These courses should be taken during the third year, in order that the courses in pharmacy and pharmacognosy mentioned above may be taken during the fourth year.

The language requirements of this course are English 1, French 1, and German 2S, which should be taken during the first and second years.

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The major study and thesis may be taken in chemistry, biology, pharmacy, or any department in which the student is sufficiently prepared to do such work. For the rules governing the major study and thesis see p. 84.

Additional electives sufficient to make 120 unit hours may be chosen upon consultation with the student adviser for pharmacy students.

Gymnastics and military drill are required during the first two years. See p. 83.

HOME ECONOMICS.

The department of Home Economics has two purposes. The first is to offer elective courses which shall be available as part of the general education of all the young women in the College of Letters and Science. The second is to offer to those young women who look forward to teaching, or to other professional work, the opportunity to take a four-years' course in Home Economics. This includes:

1. The studies required of all regular students in the College of Letters and Science.
2. Prescribed courses in general science.
3. Special courses in Home Economics.
4. Free electives.

Although the University has no normal course in Home Economics, it offers unusual facilities for those who wish to prepare themselves to teach. It gives the opportunity to take a college course, and at the same time to secure technical courses in Home Economics. It offers strong courses in those sciences which are fundamental to the consideration of the sanitary side of the subject, and in history and economics, which give satisfactory preparation for the study of more abstract problems involved. As applicants for positions as teachers of Home Economics increase in number, it will be of advantage to have had, not only special training in the subject, but also a college course.

Requirements for Admission.

The requirements for admission to this course are the same as for admission to the other courses in the College of Letters and Science. See p. 52.

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COURSE IN HOME ECONOMICS.

The number after a study indicates the number of hours per week.

FIRST YEAR.

First Semester: English 3; language 4; mathematics 3; chemistry 5; physical training 2.

Second semester: Continuation of the first.

SECOND YEAR.

First semester: Analytical chemistry 3; language 2 or 4; biology or physics 5; house sanitation 3; electives 2 or 4.

Second semester: Language 2 or 4; biology or physics 5; food analysis 3; house decoration 1; household economy 2; electives 2 or 0.

THIRD YEAR.

First semester: Bacteriology 5; physiology 3; the selection and preparation of foods 5; language 2.

Second semester: Bacteriology 3; physiology 2; language 2; electives 6.

FOURTH YEAR.

First semester: Organic chemistry 5; dietetics 3; language 2; electives 5.

Second semester: Organic chemistry 5; language 2; electives 8.

General Information.

Students in Home Economics will take general chemistry, biology, physiology, the first semester of organic chemistry, and the first semester of bacteriology with the other college students. The analytical work in chemistry, the second semester's work in organic chemistry, and the second semester's work in bacteriology will be adapted to the special needs of the department. In order to give larger opportunity for electives than would otherwise be possible, the student is allowed to choose between physics and biology; but unless her preparation in the science not chosen has been exceptionally good, she is advised to elect it at some time during her course.

One of the languages taken must be German.

Students are advised to elect American history and economics 1.

Because of the fact that courses in cookery have not been introduced into all the secondary schools, the Director of the de-

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partment may require of any student, during the four years' course, practical work not to exceed six semester hours. For this no credit will be given in the College of Letters and Science.

For detailed information about the department of Home Economics apply to W. D. HIESTAND, Registrar, or to Caroline L. Hunt, Professor of Home Economics.

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THE COLLEGE OF MECHANICS AND ENGINEERING.

FACULTY.

CHARLES R. VAN HISE, Ph. D., LL. D., President of the University.

F. E. TURNEAURE, C. E., Dean, and Professor of Bridge and Sanitary Engineering.

Professors and Assistants Professors.

STORM BULL, M. E., Professor of Steam Engineering.

C. F. BURGESS, E. E., Assistant Professor of Electrical Engineering.

C. H. BURNSIDE, M. A., Assistant Professor of Mechanics.

W. B. CAIRNS, Ph. D., Assistant Professor of American Literature.

GEO. C. COMSTOCK, Ph. B., LL. B., Professor of Astronomy and Director of Washburn Observatory.

C. A. CURTIS, A. B., Captain U. S. Army, Professor of Military Science and Tactics.

W. W. DANIELLS, M. S., Sc. D., Professor of Chemistry.

F. O. DUFOUR, C. E., Acting Professor of Bridge Engineering.

J. C. ELSOM, M. D., Professor of Physical Culture and Director of the Gymnasium.

N. M. FENNEMAN, Ph. D., Professor of General and Physiographic Geology.

W. D. FROST, M. S., Assistant Professor of Bacteriology.

W. F. GIESE, A. M., Assistant Professor of Romance Languages.

H. W. HILLYER, Ph. D., Assistant Professor of Organic Chemistry.

W. H. HOBBS, Ph. D., Professor of Mineralogy and Petrology.

D. C. JACKSON, C. E., Professor of Electrical Engineering.

L. KAHLENBERG, Ph. D., Professor of Physical Chemistry.

C. I. KING, Professor of Mechanical Practice.

C. K. LEITH, Ph. D., Professor of Economic and Structural Geology.

VICTOR LENHER, Ph. D., Assistant Professor of General and Theoretical Chemistry.

J. G. D. MACK, M. E., Professor of Machine Design.

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E. R. Maurer, B. C. E., Professor of Mechanics.
J. I. Phillips, B. S., Assistant Professor of Mechanical Drawing.
J. F. A. Pyre, Ph. D., Assistant Professor of English Literature.
A. W. Richter, M. E., Professor of Experimental Engineering.
J. W. Shuster, B. S., Assistant Professor of Electrical Engineering.
E. B. Skinner, Ph. D., Assistant Professor of Mathematics.
C. S. Slichter, M. S., Professor of Applied Mathematics.
L. S. Smith, C. E., Assistant Professor of Topographic and Geodetic Engineering.
B. V. Swenson, E. E., Assistant Professor of Electrical Engineering.
W. D. Taylor, C. E., Professor of Railway Engineering.
O. B. Zimmerman, M. E., Assistant Professor of Machine Design.

Instructors and Assistants.

P. Adams, B. A., Instructor in English.
B. S. Anderson, Machinist and Assistant in Shop Practice.
J. T. Atwood, B. S., Instructor in Mechanical Drawing.
G. J. Balzer, A. B., Assistant in Physics.
E. S. Bishop, B. L., Assistant in Physics.
A. Beatty, Ph. D., Instructor in English.
W. G. Bleyer, M. L., Instructor in English.
Michael Bonn, Assistant in Foundry Practice.
H. G. A. Brauer, Ph. D., Instructor in French.
A. L. Colton, M. A., Instructor in Physics.
E. A. Cook, B. L., Instructor in English.
A. R. Crathorne, B. S., Instructor in Mathematics.
T. H. Dickinson, M. A., Instructor in English.
M. B. Evans, Ph. D., Instructor in German.
M. G. Frampton, M. A., Instructor in English.
S. H. Goodnight, M. A., Assistant in German.
A. Haase, B. S., Assistant in Experimental Engineering.
C. H. Handschin, Ph. D., Instructor in German.
Roy Hankinson, Student Assistant in Carpentry.
F. W. Huels, B. S., Assistant in Experimental Engineering.
H. Kratsch, Machinst and Instructor in Mechanical Practice.
W. G. Lottes, Instructor in Forge Practice and Repairing.
R. B. MacNish, B. L., Instructor in French.
F. M. McCullough, B. S., Instructor in Civil Engineering.

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W. H. McINTOSH, Instructor in Woodworking.
F. C. McKINNEY, M. A., Instructor in English.
H. H. McPHERSON, M. E., Instructor in Mechanical Laboratory.
F. W. MEISNEST, B. S., Instructor in German.
A. V. MILLAR, M. S., Instructor in Descriptive Geometry and Mechanical Drawing.
L. F. MILLER, M. A., Instructor in Physics.
L. E. MOORE, B. S., Instructor in Drawing and Mechanics.
H. E. PATTEN, Ph. D., Instructor in Chemistry.
W. M. PERSONS, B. S., Instructor in Mathematics.
A. R. SEYMOUR, M. L., Instructor in French.
G. C. SHADD, B. S., Instructor in Electrical Engineering.
H. A. TAYLOR, B. S., Instructor in Physics.
J. D. SUTER, Student Assistant in Mathematics.
E. M. TERRY, A. B., Assistant in Physics.
H. J. B. THORKELSON, M. E., Instructor in Steam Engineering.
J. W. WATSON, E. E., Instructor in Electrical Engineering.
H. C. WOLFF, M. S., Instructor in Mathematics.
J. G. ZIMMERMAN, Student Assistant in Applied Electrochemistry.

Organization of the College.

The College of Engineering is organized in the belief that a thorough-going fundamental training is the first essential to a successful engineer, but that this fundamental training may be best secured not alone by theoretical study, but by giving attention as well to the practical applications of the principles involved. It is further a leading thought that after the fundamental principles have been mastered, a certain measure of specialization in the main lines of engineering is advisable, because of the great development of engineering in recent years, and the various phases which it is rapidly assuming. It is the endeavor of the college to combine a reasonable amount of specialization during the later years of its courses with a thorough grounding in the fundamentals during the earlier portions; and in carrying out this plan, it endeavors to make the mathematical and theoretical courses strong in the earlier years, and the applied courses as strong in the later years, while the draughting and shop courses continue progressively from the beginning to the end. It also introduces sufficient foreign language to enable its graduates to read the professional German or French literature, and aims to

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give so much of a mastery of the English language as to enable its graduates to present professional subjects with ease, clearness, and effectiveness.

Requirements of Admission.

The requirements for the admission of regular students are stated fully on p. 52.

Admission of Special Students.

Candidates under twenty-one years of age desiring to take special courses will be required to have the same qualifications as candidates for one of the regular courses of the University.

Persons over twenty-one years of age, *who are not candidates for a degree*, and who wish to take special studies, will be permitted to do so upon giving satisfactory evidence that they are prepared to take the desired studies advantageously. A good knowledge of elementary algebra and geometry is essential. If they subsequently desire to become candidates for a degree, or to take a regular course, they must pass the required entrance examination.

Preparation in Algebra for Engineering Courses.

Special attention is called to the changes in the requirements in algebra as set forth on page 54, and which become effective at the beginning of the academic year 1905-06.

In performing the fundamental operations of algebra, such as multiplication and division, the use of parentheses, the solving of numerical and literal equations of the first and second degree, the simplification of fractions and radicals, and the putting of problems into equations, it is of the first importance that the student should have distinct notions of the meaning and reasons for all that he does, and be able to state them clearly in his own language. He should be able to perform all of these operations, even when somewhat complex, with rapidity, accuracy, and neatness. In his preparatory studies the student is advised to solve a great many practical problems, and to describe fully the reasons for the steps taken.

Class Advisers.

In the selection and arrangement of studies, all students are under the supervision of class advisers. It is the duty of the advisers to issue class cards at the opening of each semester, admit-

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ting students to their classes, to receive the regular semester reports from instructors and special reports on deficient students, and to report to the faculty all cases requiring special action.

Reports to parents or guardians on the work of students, are sent from the Registrar's office at the end of each semester.

COURSES OF STUDY.

The College of Mechanics and Engineering offers six systematic four-year courses as follows: -

CIVIL ENGINEERING,

SANITARY ENGINEERING,

MECHANICAL ENGINEERING,

ELECTRICAL ENGINEERING,

APPLIED ELECTROCHEMISTRY.

GENERAL ENGINEERING, including an elective course in MINING ENGINEERING.

The General Engineering Course.

There is coming to be a great demand in our expanding industrial and commercial business for technically educated men who cannot be classified as engineers, properly speaking. Superintendents and managers, presidents and secretaries, owners and members of boards of directors, of all large manufacturing and commercial enterprises, as well as of all transportation, lighting, and power companies, should be acquainted with the fundamental principles and practices of some of the ordinary applications of science to modern industry. For the practical education of such men a General Engineering Course has been established, with only the fundamental engineering sciences required, in addition to the regular work of the freshman year. This leaves about one-third of the entire time to be filled by such elective studies in the College of Engineering or in other departments as the student may find best suited to his particular needs. It may well be, also that some students who expect to practice engineering will prefer to elect a considerable portion of their course in place of taking any one of the fixed engineering courses.

The Pre-Engineering Collegiate Course.

Especial encouragement is given to those who can afford the time to graduate in a collegiate course before entering the course in engineering. By electing during the collegiate course the mathe-

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matics, physics, chemistry, modern languages, surveying, and descriptive geometry, required of engineers, the degree in engineering can be obtained in two additional years. Greater satisfaction and profit is gained from the study of engineering when the student has already acquired a broad and thorough general training. Engineers are often called upon to fill the highest positions in the community, positions which demand breadth of view and wide general training. The opportunities for acquiring the breadth of education given by a complete collegiate course, only rarely arise after the student has begun the active practice of his profession.

A Five-Year Course in the College of Engineering.

Many students find it desirable to devote five years to the course instead of four. This enables them either to lighten the work or to elect some additional studies. To satisfy this demand the class advisers in the College of Mechanics and Engineering are authorized, with the consent of parents or guardians, to arrange the work with the students who desire to extend the length of their course in this manner, so as to make it cover five years in place of four. It has not been thought wise to formally arrange the work in the several courses to cover a five-year period, since different students would prefer to take it in different ways. The faculty of the College of Mechanics and Engineering recommend that students devote this additional year to the work, whenever they feel that they can afford the time and the expense. Students who elect to do this, therefore, should not feel that it is any reflection upon their abilities or upon their industry. It would rather indicate a disposition to obtain a more thorough preparation for their professional work.

Degrees.

The University confers upon the graduates in the engineering courses the degree of *Bachelor of Science*, with a specific designation of the name of the course taken.

The degree of *Civil Engineer*, *Mechanical Engineer*, and *Electrical Engineer* are conferred as second degrees upon *Bachelors of Science* in the civil, mechanical, and electrical engineering courses respectively, or in allied courses, (1) who pursue advanced professional study at the University for one year, and present a satisfactory project or thesis; or (2) who present

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suitable evidence of three years of professional work, of which one must be in a position of responsibility, and a satisfactory thesis.

Buildings.

The College of Mechanics and Engineering now occupies a building constructed for its special use, which is unusually complete and well arranged. All the professional work of the college is given in this building and in its accompanying laboratories, except some of the electrical laboratory work and the shop instruction, which are given in the commodious shop buildings near by. For chemistry the engineering students go to the chemical building, for physics and other natural sciences to Science Hall, and for language, mathematics, and other similar work, to the literary halls of the University. In this way the students of engineering come into daily contact with the students in the other University courses, to the great advantage of all classes.

Libraries.

For a general account of the library facilities of the University, see page 35. The College of Mechanics and Engineering subscribes for about one hundred and fifty technical periodicals, and also purchases duplicate copies of standard engineering works of reference, one set of which, and the engineering periodicals, are kept in the engineering reading room, on the first floor of the Engineering Building, in order to facilitate the frequent use of them by the engineeering students. The bound files of technical periodicals in the library are unusually complete, and additions are made every year.

Laboratories and Apparatus.

The engineering laboratories are well equipped for purposes of instruction and investigation.

THE TESTING LABORATORY occupies the high sub-basement under the assembly room of the Engineering Building. It is supplied with a recently purchased Riehlé torsion machine of one hundred and twenty-five thousand inch-pound capacity, permitting the testing of a shaft fifteen feet long and one and one-half inch in diameter. There is also installed a new impact machine, a one-hundred-thousand-pound Riehlé automatic and autographic testing machine, permitting the testing of materials of the larger sizes

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used in practice, and a beam testing machine, with a capacity of one hundred thousand pounds on a base of twenty-four feet. In addition to these there are also other Riehlé machines, and Olsen and Thurston machines for making tests in tension, compression, bending, and torsion. These machines are supplied with extensometers, clamps, devices for autographic records, and other special devices. A set of standard appliances for testing the wearing and cementing properties of road-building rock has also been installed.

THE CEMENT LABORATORY contains a full supply of necessary apparatus for making tests according to the American Society of Civil Engineers' standard; baths, self-recording thermometers, Boehme hammer, complete 1,000-lb. Riehlé and Fairbanks testing machines, etc. A power-driven stone saw, and grinding and polishing wheels are available in another room. The machines in the testing laboratory are also used for testing brick, stone, and cement. The foundry rattler is available for paving brick tests.

THE HYDRAULIC LABORATORY contains high and low level tanks fitted for experimenting upon the flow of water through orifices, nozzles, pipes, and over weirs. In the laboratory are several water motors, water meters, current meters, lines of pipe, hydraulic and steam rams, etc., all available for experimental work. There is also a convenient supply of gauges and other apparatus required in accurate hydraulic experiments.

THE MECHANICAL LABORATORY.—The main laboratory, which is 74 feet by 50 feet, is a one-story addition in the rear of the new building, and is so placed that the wings, which ultimately will be added to the building, will leave this laboratory in the court thus created. The floor of this laboratory is on the same level as the main basement of the building; a gallery arranged especially for visitors runs around the whole laboratory, to which gallery one gains entrance from the first floor. A part of this wide gallery is partitioned off, a portion forming laboratories for special investigation. The main laboratory is well equipped with a variety of steam engines, specially arranged for experimental work. The most important of these is a fifty horse-power cross compound engine, so arranged that either cylinder can be supplied with live steam from the boilers and run as a single cylinder engine. The surface condenser and air pump can also be disconnected so that the engine may be run as a non-condensing one. Both cylinders and receiver are provided with steam jackets, which may be used at will. By means of a Proell governor the number of

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revolutions may be varied from 50 to 125. The cut-off of the steam may vary automatically between zero and ninety-five per cent. of the stroke.

The above engine is also connected to a fifty horse-power superheater, capable of superheating the steam 200 degrees F.

There is also installed a new fifteen-ton refrigerating plant, consisting of a Corliss engine direct connected to a horizontal double-acting ammonia compressor. This machine is cross-connected to a five-ton, vertical, three-cylinder, single-acting ammonia compressor belted to an electric dynamo. With the above compressors there are installed double pipe condensers and brine coolers, brine tanks, brine coils, and ventilating coils for the cooling of rooms.

This laboratory also contains a fifty horse-power two-stage air compressor directly connected to a compound condensing engine equipped with the Meyer valve gear; also various other types of steam, gas, gasoline, and hot air engines. Among the more important pieces of apparatus is a vertical three-cylinder engine of seventy-five horse-power capacity.

The laboratory also contains some of the very latest types of gas engines, prominent among which is a vertical three-cylinder engine of seventy-five horse-power capacity.

The laboratory is supplied with friction brakes, transmitting dynamometers of various kinds and capacities, a mercury column, and other means for testing steam and vacuum gauges and indicators, and various devices for special tests. There are also the necessary tanks, weighing apparatus, pyrometers, thermometers, calorimeters, some forty indicators, revolution counters, tachometers, recording gauges, reducing motors, water meters, etc., for making complete tests of the economy and capacity of boilers and engines. The laboratory is also supplied with a very large number and variety of injectors, and with special facilities for making tests of the same.

The boiler house of the University, which furnishes steam for nearly all of the buildings of the institution, both for heating and for power purposes, is also equipped in such a manner that experimental work with reference to the economy of boilers under various conditions may easily be carried out.

Gas Analysis and Fuel Laboratories.—In the eastern wing of the building are the separate laboratories for gas and coal analysis; these rooms are both large and well lighted, and furnish

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excellent opportunities for extended researches in these very important branches of study. The equipment includes the Carpenter Coal Calorimeter, Mahler Bomb Calorimeter, Junker Gas Calorimeter, and many forms of flue gas apparatus.

THE ELECTRICAL LABORATORIES are liberally supplied with scientific and commercial instruments, and are arranged for instruction and investigation. With the space and apparatus which is allowed through the generosity of past legislatures, the equipment has been made unusually complete in the lines of continuous current and single and polyphase alternating current generation and distribution, and commercial electrochemistry and electrometallurgy.

The dynamo collection consists of a large number of continuous current and alternating-current generators and motors of various types (including four types of arc-light machines), which are specially installed for the purpose of instruction and experiment. These are placed in a large laboratory room and are arranged to be driven by a 150 horse-power high-speed engine specially provided for the purpose. For use in testing dynamos all necessary apparatus is supplied, including large lamp banks, transformer banks, and water rheostats for loading generators; special Prony brakes, etc., for loading motors; cradle dynamometer, and accurate electrical instruments of all useful types. A transformer bank for use in instruction and testing, which represents nearly all American and some foreign products, and an equally complete bank of recording electric meters, are also located in this room.

Two large rooms are occupied by the appliances and apparatus required for instruction and experiments relating to electric batteries, electrolysis, electroplating, and electrometallurgy. Three smaller rooms are fitted up for experimental investigations. The equipment for these laboratories consists of dynamos and tanks for depositing metals and for other electrolytic processes, apparatus for cleaning, polishing, precipitating, filtering and other processes. An electric furnace room has been fitted up with rheostats and instruments for operating electric furnaces, power being supplied by a 100 horse-power generator; various electric furnaces for electrometallurgical operations requiring the intense heat of the electric arc are operated therefrom. Sources of electrical current, both alternate and direct, are available for experimental work, alternating pressure as high as 50,000 volts being employed. The equipment is one of the first and most complete of its kind.

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Other rooms are dedicated to work in electrical testing, measuring illumination, and various other branches of laboratory instruction and investigation.

A great number of amperemeters, voltmeters, wattmeters, wheatstone bridges, variable self-inductance and mutual-inductance boxes, condensers, galvanometers, electrodynamometers, electric balances, 100,000 ohm and megohm resistances, Clark cells, Burgess electrometer, testing sets, and other apparatus are supplied for general use, while standard apparatus for determining the adjustments of the general instruments is at hand. Special means are provided for the important functions of insulation testing, testing the magnetic qualities of metals, including a Ewing hysteresis tester and a Ewing permeability bridge, for photometry of Nernst, arc, and incandescent lamps, and for measuring the distribution of illumination, for which the equipment is very full, etc. Apparatus is also provided for class-room demonstration, such as apparatus for demonstrating the phenemona of polyphase current transformation and polyphase motors, a fine set of models and charts illustrating the different forms of armature windings, etc.

A Thompson electric welder, located in the dynamo room, gives opportunity for instruction upon the electrical working of metals, and a transformer of twenty kilowatts capacity furnishes alternating current at 50,000 volts pressure for instruction in high pressure testing and the phenomena of high pressure electric power transmission. Alternating and polyphase (2-phase and 3-phase) currents of the ordinary frequencies are on tap, at the switchboards, and other frequencies may be generated at will by means of rotary converters, one of which has a capacity of 30 kilowatts. Continuous currents of any desired value up to 1,200 amperes and pressures up to 1,000 volts can be had at will.

The demand from both undergraduate and graduate students, for accommodations in these laboratories has grown so rapidly that another large addition is now being made to the laboratory building for the purpose of increasing the already extensive facilities briefly described in the above paragraphs. This addition will be equipped and ready for use before the opening of the college year of 1904-05.

All electrical laboratory work is made to conform with, and to illustrate, the class-room instruction. Of the total number of

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hours given to instruction in the electrical engineering courses, about one-half is devoted to work in the laboratories.

THE BRIDGE ENGINEERING DEPARTMENT owns a set of Fraenkel's autographic apparatus for the testing of bridges under moving train loads. This includes two extensometers for measuring strains in members and a deflectometer for measuring vertical and lateral deflections. The department also possesses a large French model of a skew arch bridge, several large size iron models of bridge joints, and a large collection of drawings and photographs, to which additions are constantly being made.

THE ASSAY LABORATORY is situated in the south part of the basement of the chemical laboratory. It has separate rooms for furnaces, tables, wet assaying, and balances. The furnace room is supplied with eleven crucible and three muffle furnaces, as well as a small gas plant. It has steam power, a Sturtevant blower, bullion rolls, a Blake ore crusher, and other pulverizers. The table room has space for twenty-four students, and is well supplied with ordinary balances. In the balance room are first-class quantitative balances by Becker, and an Oertling gold balance.

THE SURVEYING LABORATORY.—By an agreement with the director of Washburn Observatory, the surveying laboratory shares in the free use of the extensive apparatus belonging to that observatory, and including, in addition to the large equatorial telescope and the meridian circle, collimators, transit micrometers, chronograph, sidereal and meantime clocks, zenith telescopes, a transit instrument of the broken type, chronometers, an altazimuth, a universal instrument of the German type, spherometer calipers, and a complete set of meteorological instruments.

In addition to this equipment, the surveying laboratory contains all the portable, astronomical, and field instruments needed for an extensive triangulation, topographic and hydrographic survey, also for all the work done in railway engineering, including theodolites, altazimuth, tidal gauge, heliotropes, Kern precise-level and new U. S. C. & G. S. precise-level outfits, sounding apparatus, base-line apparatus, current meters, transits, compasses, levels, plane-tables, telemeters, and such special instruments as planimeters, pantographs, sextants, computing machines, aneroid barometers, etc.

THE MACHINE SHOP affords excellent facilities for mechanical practice. It embraces a main machine room properly equipped; a carpenter shop supplied with wood-working machines; a forge

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room provided with forges and their equipment with blast and exhaust fan; a foundry room whose equipment consists of a cupola, brass furnace, and core oven, with the necessary small tools; a wood-work room supplied with benches, carpenter tools, and wood turning lathes; and a pattern room furnished with the requisite tools. The shop is supplied with convenient lockers, closets, and washroom with hot and cold water.

BACTERIOLOGICAL LABORATORIES.—For a description of these see page 41.

THE ENGINEERING MUSEUM contains a complete set of Schroeder's models for descriptive geometry, including shades, shadows, and perspective; also a small collection of Schroeder's kinematic models, besides a number of smaller models, made by students, illustrating problems in kinematics. An excellent industrial collection is in process of development.

The standards of weight and measure belonging to the state are kept in the civil engineering department, and all official comparisons are made here.

Inspection Tours.

An inspection tour by the members of the senior class is made each year. In this tour great manufacturing establishments and other important private and public engineering works in Chicago, Milwaukee, and elsewhere are visited. These tours are made under the guidance of the professors, and are deemed an essential part of the student's work.

Expenses.

Tuition for residents of the State of Wisconsin....	FREE.
Tuition for non-resident students—per semester....	$20 00
General fee—first semester.....	15 00
General fee—second semester	15 00
Engineering periodical fee for the year.....	1 00

A laboratory fee of $2.00 per semester, for each two hours' work per week, is charged in all the engineering laboratories, and for the use of surveying instruments in the field.

Students working in any of the other laboratories of the University are also required to pay a fee or to make a deposit to cover the cost of the materials and repairs to instruments used by them. For a list of these fees, see page 74.

At the beginning of the freshman year students must be prepared to meet an expenditure of about $70.00 for laboratory fees,

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drawing instruments, text books, and military uniform. For the second semester these expenses will not exceed $10.00. For subsequent years the fees and text books will amount to $15.00 to $20.00 per semester.

Rooms, furnished and unfurnished, can be obtained in the city at reasonable rates. The cost of board in clubs is from $2.25 to $3.00 per week; in private families from $2.50 to $4.00 per week.

Modern Language Required in all Courses of the College of Mechanics and Engineering.

1. When German is offered for entrance: There is required a four-fifths course in German throughout the freshman year, and a three-fifths course in technical German for one semester of the sophomore year.

2. When French is offered for entrance: There is required a four-fifths course in German or Spanish throughout the freshman year, and a three-fifths course in French for one semester of the sophomore year.

3. When four years of Latin is offered for entrance: There is required a four-fifths course throughout the freshman year, and a three-fifths course for one semester of the sophomore year in either French, German, or Spanish.

4. When neither a modern language nor Latin is offered for entrance: Students who are well prepared in all their work will be received without a preparation in modern language, but subject to a condition in the same. In this case there will be required a four-fifths course in either German or French throughout the freshman year, this being in lieu of the modern language requirements for entrance. If German be taken in the freshman year, there will be required a four-fifths course in German throughout the sophomore year, and a three-fifths course in technical German for one semester of the junior year. If French be taken in the freshman year, there will be required a three-fifths course in French for one semester of the sophomore year, and a four-fifths course in German or Spanish throughout the junior year.

For those who come prepared in modern language, and who elect to take the course in five years, an additional modern language may be taken as a four-fifths course in the third year.

The modern language requirements, as given in the detailed statements below, must be interpreted by, and made consistent with, the general requirements as stated above.

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OUTLINE OF ENGINEERING COURSES.

Freshman Year.—All Courses.

Note.—In reckoning the hours per week required for the various studies, two hours of laboratory, draughting room, field or shop work count as one hour of class-room work, which is the unit in this outline.

FIRST SEMESTER.	Hrs. per W'k
German 2E,* French 3, or Spanish 3	4
English 1	3
Mathematics 101, Algebra	5
Chemistry 2	3
Mechanical Drawing 1	3
†Topographical Engineering 2, or Shopwork	1

SECOND SEMESTER.	
German 2E, French 3, or Spanish 3	4
English 1	3
Mathematics 102 and 103 (Trigonometry and Analytical Geometry)	5
Chemistry 2	3
Mechanical Drawing 2	3
†Topographical Engineering 2 or Shopwork	1
†Shop Work 1 and 2 (Mechanical and Electrical Engineers)	2

CIVIL ENGINEERING COURSE.

Sophomore Year.

FIRST SEMESTER.

Mathematics 103 and 105 (Analytic Geometry and Calculus)	5
Physics 101	5
Topographical Engineering 3, Elementary Surveying	3½
Mineralogy 2 (Blow-pipe Analysis)	2
Topographical Engineering 1 (Topographic Drawing)	1½
Mechanical Drawing 3 (Descriptive Geometry)	3

*The figures in the text refer to the numbers of the course of study.

†Topographical Engineering is required of Civil Engineers, and Shopwork of Mechanical and Electrical Engineers. May be taken either semester.

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SECOND SEMESTER.

	Hrs. per W'k
Mathematics 105 (Calculus)	3½
Physics 101	4
German 3E or French 7	3
Mechanics 1a, 1b and 2	7
Topographical Engineering 4 (Advanced Surveying)	3½
Topographical Engineering 6 (Trigonometric Survey)	2 weeks

Junior Year.

FIRST SEMESTER.

Mechanics 3a, 3b	5
Hydraulics 1 and 3	3
Steam Engineering 7	2
Mechanical Laboratory 3	1
Structural Engineering 1 (Structural Details)	2
Railway Engineering 1	5
Materials of Construction 1	3

SECOND SEMESTER.

Railway Engineering 3 (Maintenance of Way)	2
Topographical Engineering 5 (Geodesy)	2
Structural Engineering 2, 3, 4a (Masonry)	4
Structural Engineering 5a (Bridge Stresses); 7a (Bridge Design)	6
Materials of Construction 2 (Testing Laboratory)	3
Astronomy, or Electrical Installations 11	4
Topographical Engineering 6 (Trigonometric Survey)	2 weeks

Senior Year.

FIRST SEMESTER.

Structural Engineering 4b (Dams and Stereotomy)	3
Structural Engineering 5b (Bridge Stresses), 6, 7b (Bridge Design)	6
Railway Engineering 5 (Railway Economics)	2
Municipal Engineering 1 (Water Supply)	3
Elective and Thesis	7

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SECOND SEMESTER.

	Hrs. per W'k
Railway Engineering 7 (Tunnels and Substructures)	1½
Rivers and Canals 1	1½
Municipal Engineering 2 (Sanitary Engineering)	3
Municipal Engineering 4 (Roads and Pavements)	2
Contracts and Specifications	1
Thesis and Elective	12

Graduate Courses.

For graduate students and students desiring to specialize, opportunity is afforded in the elective courses and in courses arranged on consultation with the instructors, for advanced study in railway, structural, municipal, topographic, or geodetic engineering, and for special laboratory investigations.

SANITARY ENGINEERING COURSE.

Sophomore Year.

Same as the civil engineering course, p. 203.

Junior Year.

FIRST SEMESTER.

Mechanics 3	5
Hydraulics 1 and 3	3
Railway Engineering 1	5
Biology of Water Supplies	5
Chemistry 12	3

SECOND SEMESTER.

Railway Engineering 3 (Maintenance of Way)	2
Structural Engineering 2, 3, 4a (Masonry)	4
Structural Engineering 5a, 7a (Bridge Stresses, Roof and Bridge Design)	5
Chemistry 14 (Water Analysis)	4
Materials of Construction 1, 2	6
Topographical Engineering 6 (Trigonometric Survey)	2 weeks

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Senior Year.

FIRST SEMESTER.

	Hrs. per W'k
Steam Engineering 7 (Steam Engine)	2
Mechanical Laboratory 3	1
Structural Engineering 4b (Dams and Stereotomy)	3
Structural Engineering 6, 7b (Bridge Design)	4
Municipal Engineering 1, 3 (Water Supply)	5
Steam Engineering 8 (Heating and Ventilation)	3
Elective and Thesis	3

SECOND SEMESTER.

Railway Engineering 7 (Tunnels and Substructures)	1½
Municipal Engineering 2, 3 (Sewerage and Drainage)	5
Municipal Engineering 4 (Roads and Pavements)	2
Electrical Installations 11	4
Contracts and Specifications	1
Thesis and Elective	7

MECHANICAL ENGINEERING COURSE.

Sophomore Year.

FIRST SEMESTER.

Mathematics 103, 104 (Analytical Geometry, Calculus)	5
Physics 101	5
Shop-work, 3, 4, 5, 7 (Vice-work in Iron and Forging)	4
German 3E, or French 7	3
Mechanical Drawing 3 (Descriptive Geometry)	3

SECOND SEMESTER.

Mathematics 104	5
Mechanics 1a, 1b	5
Physics 101	5
Machine Design 1 (Kinematics)	4
Shop-work 6 (Machine Work)	1

Junior Year.

FIRST SEMESTER.

Mechanics 3a, 3b	5
Steam Engineering 1, 2 (Thermodynamics, Heat Engines)	5
Mechanical Laboratory	1

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	Hrs. per W'k
Machine Design 3 (Elementary Design)	6
Shop-work 8, 9 (Machine Work and Tool Making)	4

SECOND SEMESTER.

Materials of Construction 1	3
Hydraulics 1, 2, 3	5
Steam Engineering 3, 4 (Steam Engines, Boilers)	4
Mechanical Laboratory	1½
Machine Design 4 (Crane Design and Graphic Statistics)	5
Shop-work 10, 11 (Machine Construction)	2½

Senior Year.

FIRST SEMESTER.

Applied Electro-Magnetism 2, 3 (Electrical Machinery, Laboratory)	5
Mechanical Laboratory	1½
Materials of Construction 2 (Testing Laboratory)	1½
Shop-work 12 (Construction and Pattern Work)	3½
Steam Engineering 5 (Steam Engine Design, optional)	5
Machine Design 5 (Machine Elements, Transmission of Power, optional)	5
Elective, including thesis	4½

Inspection tour through industrial establishments.

Either Steam Engineering 5, or Machine Design 5, must be taken, and it is recommended that the class work of the study not taken be elected in addition. The study selected must be taken for the entire year.

SECOND SEMESTER.

Contracts and Specifications	1
Alternating Currents 7 (Elementary Applied)	3
Steam Engineering 5 (Steam Engine Design, optional)	5
Machine Design, Machine Elements, Transmission of Power (optional)	5
From Machine Design 5, 6, 10, Steam Engineering 5, 8, 9, Mechanical Laboratory, and Shop-work 13	7
Thesis and Elective	5

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ELECTRICAL ENGINEERING COURSE.

Sophomore Year.

FIRST SEMESTER.

	Hrs. per W'k
French 7, or German 3E (Technical Reading)	3
Mathematics 103, 104 (Analytic Geometry and Calculus)	5
Physics 101	5
Chemistry 11, or Shop-work	3
Machine Design 1 (Kinematics)	4

SECOND SEMESTER.

Mathematics 104	5
Physics 101	5
Chemistry 11, or Shop-work 3, 5	2
Mechanics 1a, 1b	5
Mechanical Drawing 3 (Descriptive Geometry)	3

Junior Year.

FIRST SEMESTER.

Mechanics 3a, 3b	5
Physics 104 (Precision of Measurements)	2½
Applied Electro-Magnetism 1 (Electro Magnets and Dynamos)	3
Steam Engineering 6 (Thermodynamics)	2
Machine Design 3 (Elementary Design)	5
Shop-work 8, 9 (Machine Work and Tool Making)	4

SECOND SEMESTER.

Hydraulics 1, 2	4
Steam Engineering 6 (Thermodynamics)	2
Mechanical Laboratory	1½
Applied Electro-Magnetism 1, 2 (Electro-Magnets and Dynamos)	5
Electrical Installations 2 (Electrical Testing)	3
Materials of Construction 1	3
Elective in Civil and Mechanical Engineering	2 or 3

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Senior Year.

FIRST SEMESTER.

	Hrs. per W'k
Alternating Currents 1, 2	5
Applied Electro-Magnetism 2 (Testing Direct Current Dynamos)	2
Mechanical Laboratory	1½
Hydraulics 3 (Laboratory)	1
Electives from: Electrical Installations 3, 5, 7, 8, 10, and Applied Electrochemistry 1	7
Thesis and Elective	4 or 5

Inspection tour through industrial establishments.

SECOND SEMESTER.

Alternating Currents 1, 2	3
Electives from: Electrical Installations 3, 4, 5, 6, 8, Alternating Currents 3, 4, Applied Electrochemistry 2	10
Contracts and Specifications	1
Materials of Construction 2 (Testing Laboratory)	1½
Thesis and Elective	5

Graduate Courses.

Graduates and advanced students are offered instruction in advanced theory, design, and experimental investigations relating to electrical engineering and applied electrochemistry, as is more fully explained in later pages under Departments of Instruction, and also under the Graduate School, page 299.

APPLIED ELECTROCHEMISTRY COURSE.

Sophomore Year.

FIRST SEMESTER.

Mathematics 103, 104 (Analytical Geometry, Calculus)	5
Physics 101	5
Machine Design 1 (Kinematics)	3
Shop-work	2
German 3E, or French 7	3
Chemistry 11	2

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SECOND SEMESTER.

	Hrs. per W'k
Mathematics 104	5
Physics 101	5
Mechanics 1	5
Shop-work 7	1
Chemistry 11	2
Mechanical Drawing 3 (Descriptive Geometry)	3

Junior Year.

FIRST SEMESTER.

Mechanics 3	5
Physics 104 (Precision of Measurements)	2½
Applied Electro-Magnetism 1, 2 (Electro-Magnets and Dynamos)	3
Chemistry 12	5
Chemistry 31 (Electrochemistry)	5

SECOND SEMESTER.

Applied Electro-Magnetism 1, 2 (Electro-Magnets and Dynamos)	5
Materials of Construction 1	3
Chemistry 4	5
Chemistry 31 (Electrochemistry)	5
Elective	3

Senior Year.

FIRST SEMESTER.

Applied Electrochemistry 1	5
Alternating Currents 1, 2	5
Chemistry 20	5
Steam Engineering 7	2
Mechanical Laboratory 3	1
Materials of Construction 2 (Testing Laboratory)	1½
Thesis and Elective in Mineralogy, Structures, etc.	2

Inspection tour through industrial establishments.

SECOND SEMESTER.

Alternating Currents 1, 2	3
Electrical Installations 4 (Electric Lighting and Power)	3

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	Hrs. per W'k
Applied Electrochemistry 2	5
Applied Electrochemistry 5	2
From Electrical Installations 6, 8, 10, and Alternating Currents 3, 4	4
Contracts and Specifications	1
Thesis and Elective	4

Graduate Courses.

See page 209.

GENERAL ENGINEERING COURSE.

The subjects given below are the ones which are required, though some variation will here be allowed. Elective studies must be arranged to secure continuity of work and must be approved by the class officer. At least 15 hours per week must be taken of the studies listed in the Departments of Instruction in the College of Engineering, page 214. Studies taken in excess of the minimum requirement cannot be counted to shorten the time required for the course.

Freshman Year.

All the studies of this year are required, and are the same as in the specialized engineering courses.

Sophomore Year.

FIRST SEMESTER.

Mathematics 103 and 105 (Analytical Geometry and Calculus)	5
Physics 101	5
Mechanical Drawing 3 (Descriptive Geometry)	3
Elective (History 2; 3 hours recommended)	5 to 8

SECOND SEMESTER.

Mathematics 105 (Calculus)	3½
Physics 101	4
Mechanics	5
Elective (Economics 1; 3 hours recommended)	6 to 9

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Junior Year.

FIRST SEMESTER.

	Hrs. per W'k
Mechanics 3	5
Steam Engineering 7	2
Mechanical Laboratory 2	1
Hydraulics 1, 3	3
Elective	7 to 10

SECOND SEMESTER.

Materials of Construction 1, 2 (Testing Laboratory)	4½
Machine Design 8	3
Elective	9 to 12

Senior Year.

FIRST SEMESTER.

Applied Electro-Magnetism 2 and 3	5
Elective	13 to 16

SECOND SEMESTER.

Thesis and Elective	18 to 21

MINING ENGINEERING GROUP OF ELECTIVES.

Students who take the general engineering course may group their electives in chemistry, mineralogy, and geology in such a way as to prepare them for mining engineering. The arrangement of these electives, togther with such other studies as are most desirable in a mining course, is as follows:

Sophomore Year.

FIRST SEMESTER.

Chemistry 12, 13	5
Topographical Engineering 3	3½

SECOND SEMESTER.

Chemistry 12, 13	5
Topographical Engineering 9, 10	4

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Junior Year.

FIRST SEMESTER.

	Hrs per W'k
Mineralogy 6	5
Geology 1	5

SECOND SEMESTER.

Mineralogy 6	5
Geology 2, 3	5
Structural Engineering 2	2

Senior Year.

FIRST SEMESTER.

Railway Engineering 1	4
Machine Design 3	2
Geology 11 and one of courses 14 to 18	6
Mineralogy 8	3

SECOND SEMESTER.

Railway Engineering 7	2
Structural Engineering 9	3
Geology 11, 12 and one of courses 14 to 18	6
Petrology 9, 10	5

The course of study here outlined is arranged with special reference to the needs of those who expect to work in the Lake Superior region.

The professors in the department of Geology, in the College of Letters and Science, have for many years been engaged in the investigation of the mining resources of the Northwest for the United States Geological Survey, and they offer training for mining work in this field, and especially in the iron ores, which is surpassed in no other institution. Students who continue work in geology in a graduate course may qualify themselves for work in mining geology (as distinguished from technical mining engineering), judging ore districts and ore deposits, directing exploration and mining development, and better qualifying themselves for mine superintendency.

If desired, students taking the mining group will usually be able to obtain their degree in mining engineering at a mining school

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in one additional year. Students who thus take a five-year course will secure a broader and better training than they would by entering a mining school at the outset and completing their course in four years.

Elections for Students in the College of Letters and Science.

Students who plan to graduate in engineering, after taking a degree in the College of Letters and Science, should aim to make the following elections during their undergraduate course, in order that the engineering course may be completed in two additional years:

Mathematics 101 to 105; Physics 101; Chemistry 2; Mechanical Drawing 1, 2, and 3; Topographical Engineering 2, 3, and 4, or Machine Design 1; Applied Mechanics 1.

It is well also to elect some or all of the freshmen and sophomore shop work, as an extra study.

Graduation in More Than One of the Engineering Courses.

Graduates in any of the engineering courses may graduate in any other engineering course after one year of additional study. Students who contemplate doing this should, however, make their elections, especially in the senior year, with this end in view.

DEPARTMENTS OF INSTRUCTION.

The unit of reckoning is one hour of class-room work per week, making a one-fifth study. Two hours of draughting, laboratory, field, or shop work (which require no outside preparation) count as one hour of recitation.

French.

DR. BRAUER AND MR. MACNISH.

3. Special Elementary Course for Engineers, essentially as follows: *Roman d'un Jeune Homme Pauvre, La Petite Fadette, Le Cid, Le Misanthrope. Throughout the year; M., Tu., W., Th., at* 8, Mr. MACNISH; *M., Tu., W., Th., at* 9, Mr. MACNISH.
7. Scientific French for Engineers. Continuation of course 3. Herdler's *Scientific Reader*, Luquien's *Popular Science*, and other scientific prose. *First semester; Tu., W., Th., at* 12. Dr. BRAUER.

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Any of the other courses in French are open to properly qualified students of the College of Engineering.

German.

MR. MEISNEST, DR. HANDSCHIN, MR. GOODNIGHT, AND DR. EVANS.

2E. *First semester:* Narrative and historical prose and one drama. Grammar and composition. *Second semester:* Introductory scientific prose. *Four times a week at* 8 *and* 9. *Four sections.* Required of freshmen, unless French is elected.

3E. Advanced Prose. Technical science and current engineering literature. *Three times a week for first or second semester, at* 12. *Two sections.* For sophomores.

Spanish.

ASSISTANT PROFESSOR GIESE AND MR. SEYMOUR.

3. Elementary. Giese's *First Spanish Book. Throughout the year; M., Tu., W., Th., at* 9 *and* 12. Mr. SEYMOUR.

4. Conversation, Composition, and Reading. *Throughout the year as a two-fifths, or one semester as a three-fifths study.* Assistant Professor GIESE.

Courses 5 and 6 (see p. 142) are also open to engineering students.

English.

ASSISTANT PROFESSOR PYRE, ASSISTANT PROFESSOR CAIRNS, DR. BEATTY, MR. BLEYER, MR. COOK, MR. FRAMPTON, MR. DICKINSON, MR. M'KINNEY, MR. ADAMS, AND MR. DAGGY.

1. Freshman English. English Prose Style. Composition. *Three hours a week throughout the year.* For hours and rooms see time table of required studies. Required of freshmen in all courses.

14. Elocution. Voice training and plain reading and speaking. *First semester; three times a week.*

Elective for Engineers.

Physics.

MR. TAYLOR, MR. COLTON, MR. MILLER, MR. BALZER, MR. BISHOP, MR. TOAN, AND MR. TERRY.

101. General Lectures and Introductory Laboratory Practice. Required of sophomores in engineering. *Lectures M., Th., at*

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4. Mr. TAYLOR. *Two recitations in sections, at hours to be assigned.* Mr. TAYLOR, and Mr. COLTON. Laboratory practice. *Twice a week throughout the year.* Mr. MILLER.

104. Advanced Laboratory Course in Electrical and Magnetic Measurements. Testing and calibration of electrical instruments, and determination of constants. Required of juniors in electrical engineering. *Two and one-half hours per week during the first semester.* Mr. TAYLOR.

Chemistry.

PROFESSOR DANIELLS, PROFESSOR KAHLENBERG, ASSISTANT PROFESSOR HILLYER, ASSISTANT PROFESSOR LENHER, AND ASSISTANTS.

2. General Chemistry. For freshmen in the College of Engineering. *Three-fifths study. Two lectures, one recitation, and one three-hour laboratory period weekly throughout the year.* Assistant Professor LENHER and assistants.

4. Chemical Preparations. Laboratory course in the preparation of typical inorganic compounds. Assistant Professor LENHER.

12. Analytical Chemistry. For engineers. *Two-fifths study for sophomore year. First semester:* Qualitative analysis. *Second semester:* Quantitative analysis. Professor DANIELLS and Mr. HUTCHINS.

13. Quantitative Chemical Analysis for Engineers. Continuation of course 12. *Three-fifths study throughout the junior year.* The analysis of metals, ores, minerals, and economic products. Professor DANIELLS, and Mr. HUTCHINS.

14. Water Analysis. For students in sanitary engineering. *Five-fifths study during the second semester.* Professor DANIELLS.

20. Organic Chemistry. *Five-fifths study throughout the first semester.* Work of a similar character may be continued in the second semester. Required of seniors in applied electrochemistry. Assistant Professor HILLYER.

24. Electrolysis and Electrosynthesis of Organic Compounds. Conferences once a week, with laboratory work. *Three-fifths study during the second semester.* Assistant Professor HILLYER.

30. Physical Chemistry. General course. The lectures and recitations are supplemented by laboratory exercises in physicochemical measurements, thus making a full study. This course must be preceded by course 1 in chemistry. *Five-*

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fifths study throughout the year. Lectures and recitations, first semester; Tu., Th., at 8. *Second semester; W., F., at* 8. Professor KAHLENBERG and Mr. SHINN.

31. Electrochemistry. Lectures and recitations twice a week. Laboratory work in electrochemical measurements and in electrolysis of various chemical compounds supplements the lectures, and with them makes a *five-fifths study. Lectures during the first semester; laboratory work; throughout the year.* Professor KAHLENBERG and Mr. SHINN.

32. Thermal Chemistry. *Lectures M., at* 8, *and one period of three hours of laboratory work per week. Second semester.* Professor KAHLENBERG.

33. Special Laboratory Course in Physical Chemistry. This course is for seniors in engineering who desire an acquaintance with the methods of physico-chemical measurement. *Daily, first semester; hours to be arranged.* Professor KAHLENBERG.

35. Advanced Physical Chemistry. Lectures on selected topics. *Second semester; Th., at* 8. In 1905 the lectures will be on the subject of solutions. Professor KAHLENBERG.

36. Research Work in Physical Chemistry. *Daily throughout the year; hours to be arranged.* Professor KAHLENBERG.

50. Assaying. A course in practical assaying. *Second semester; hours to be arranged.* Assistant Professor LENHER and Mr. TIBBALS.

Geology and Mineralogy.

PROFESSORS HOBBS, LEITH, AND FENNEMAN, AND MR. BALL.

1. General Geology. *First semester; M., Tu., W., Th., F., at* 12. Professor FENNEMAN.

2. Historical Geology. *Five-fifths; first half of second semester, at* 12. Professor FENNEMAN.

3. Field Geology. *Five-fifths; last half of second semester; F.,* 2 *to* 6, *Sat.,* 9 *to* 1 *and* 2 *to* 6. Professor FENNEMAN.

4. Physical Geography. *First semester; M., W., Th., at* 10. Professor FENNEMAN.

5. Physiography of the United States. *Second semester; M., W., Th., at* 10. Professor FENNEMAN.

6. General Course in Mineralogy. *First semester; M., Tu., W., Th., F., at* 11. *Second semester; M., Tu., W., Th., F., (a) at* 11, *(b) after Easter, at* 11 *to* 1. Professor HOBBS.

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7. Short Course in Mineralogy. Required of civil engineers in the sophomore year. *First semester; Tu., F.*, 2 to 4. Professor HOBBS.
8. Optical Mineralogy. *First semester; M., W., F.*, 9 *to* 11. Professor HOBBS.
9. Field Petrology. *Second semester; Tu., Th.*, 9 *to* 11. Professor HOBBS.
10. Microscopic Petrology. *Second semester; M., W., F.*, 9 *to* 11. Professor HOBBS.
11. Economic Geology (Metallic). *Three-fifths study; first semester and first half of second semester.* Professor LEITH.
12. Economic Geology (Non-metallic). *Three-fifths study; second half of second semester, to follow course* 11. Professor LEITH.
13. Introductory Paleontology.
14. Principles of Structural Geology. *Three-fifths study throughout the year.* (Omitted in 1904-05.) Professor LEITH.
15. Principles of Metamorphism and Their Application to the Deposition of Ores. *Three-fifths study throughout the year,* Professor LEITH.
16. Principles of pre-Cambrian Geology. *Three-fifths study throughout the year.* (Omitted in 1904-05.) Professor LEITH.
17. Lake Superior Geology. *Three-fifths study throughout the year.* (Omitted in 1904-05.) Professor LEITH.
18. Advanced Petrology. *Credit given on work done.* Professor HOBBS.
19. Advanced Crystallography. *Hours to be arranged.* Professor HOBBS.
20. Areal Physiography. *Credit given for work done.* Professor FENNEMAN.
21. Research Work for Graduates. This is a full or double study running through the year, as desired by individual students.

Geological Seminary. *One hour per week.*

Astronomy.

PROFESSOR COMSTOCK.

6. Astronomical Practice. Theory and use of the simpler instruments used in astronomical and geodetic field work. Determination of time, latitude, and the direction of the me-

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ridian, together with drill in numerical computations. *Second semester; M., Tu., W., Th., 2 to 4.*

Elective for juniors in civil, sanitary, and general engineering.

7. Advanced Field Astronomy. Spherical astronomy, the method of least squares, theory and practice of the more refined methods for the determination of time, latitude, and azimuth. *Two hours a week throughout the year.*

Open to election by students who have completed course 6.

Mathematics.

PROFESSOR SLICHTER, ASSISTANT PROFESSOR SKINNER, MR. WOLFF, MR. CRATHORNE, MR. PERSONS, AND MR. LUTER.

101. Algebra. *First semester; M., Tu., W., Th., F., four sections at 8 and four sections at 9 (90 hours in class-room).* Professor SLICHTER, Mr. WOLFF, Mr. CRATHORNE, Mr. PERSONS, and Mr. LUTER.

Required of freshmen in engineering.

102. Plane Trigonometry. *Part of second semester; M., Tu., W., Th., F., at 8 and 9 (36 hours in class-room).* Professor SLICHTER, Mr. WOLFF, Mr. CRATHORNE, Mr. PERSONS, and Mr. LUTER.

Required of freshmen in engineering.

103. Analytical Geometry. *Part of second semester; M., Tu., W., Th., F., at 8 and 9 (54 hours in class-room).* Professor SLICHTER, Mr. WOLFF, Mr. CRATHORNE, Mr. PERSONS, and Mr. LUTER.

Required of freshmen and sophomores in engineering.

104. Calculus and Analytic Geometry. For all courses except civil engineering. *Part of first semester, and second semester; M., Tu., W., Th., F., six sections, at 10 and 11 (180 hours in class-room).* Professor SLICHTER, Mr. WOLFF, Mr. CRATHORNE, and Mr. PERSONS.

105. Calculus. For the civil Engineering course. *Part of first semester, and second semester; M., Tu., W., Th., at 10 and 11 (166 hours in class-room).* Professor SLICHTER, Assistant Professor SKINNER, Mr. WOLFF, Mr. CRATHORNE, Mr. PERSONS, and Mr. LUTER.

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Biology of Water Supplies.

ASSISTANT PROFESSOR FROST.

8. Biology of Water Supplies. Lectures and laboratory work. This course is adapted to the needs of students in sanitary engineering. *First semester. Full study.* Assistant Professor FROST.

Required of juniors in sanitary engineering.

Mechanical Drawing.

ASSISTANT PROFESSOR PHILLIPS, MR. MILLAR, MR. ATWOOD, MR. MOORE, AND MR. WILLIAMS.

1. Elements of Drawing. Geometrical constructions; orthographic, isometric, and cabinet projections; freehand lettering and sketching. Tracy's *Mechanical Drawing. First semester; one lecture, one recitation, and one two-hour drawing period weekly; three-fifths credit.* Assistant Professor PHILLIPS, Mr. ATWOOD, Mr. MOORE, and Mr. WILLIAMS.

Required of freshmen in engineering.

2. Elements of Drawing. Sections and intersections; freehand lettering; shades, shadows, and perspective. Tracy's *Mechanical Drawing. Second semester; one lecture, one recitation, and one two-hour drawing period weekly; three-fifths credit.* Assistant Professor PHILLIPS, Mr. ATWOOD, Mr. MOORE, AND Mr. WILLIAMS.

Required of freshmen in engineering.

3. Descriptive Geometry. Problems relating to the point, line, and plane. The generation and classification of lines and surfaces; planes tangent to surfaces of single and double curvature; intersections, developments, and revolutions. Churchs' *Descriptive Geometry. First semester* for civil and mechanical engineering students. *Second semester* for electrical engineering students. *One lecture, two recitations, and one three-hour drawing period weekly; three-fifths credit.* Assistant Professor PHILLIPS and Mr. MILLAR.

Required of sophomores in engineering.

4. Freehand Lettering. A continuation of the lettering work in courses 1 and 2. *First semester; one two-hour period weekly; one-fifth credit.* Assistant Professor PHILLIPS.

Elective for engineering students.

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5. Sketching. In perspective. Architectural, bridge, and machine details. *Second semester; one two-hour period weekly; one-fifth credit.* Assistant Professor PHILLIPS.

Elective for engineering students.

Applied Mechanics.

PROFESSOR MAURER, ASSISTANT PROFESSOR BURNSIDE, MR. MOORE, AND MR. M CULLOUGH.

1a. Statics. Treated, as are all the following courses, with special reference to the requirements of engineers. *First ten weeks of the second semester; M., Tu., W., Th., F., at* 10 *or* 11.

1b. Strength of Materials. Mechanical theory of the subject mainly. *Last eight weeks of the second semester; M., Tu., W., Th., F., at* 10 *or* 11. Professor MAURER, Assistant Professor BURNSIDE, and Mr. MOORE.

Required of sophomores in engineering.

2. Graphic Statics. Co-ordinated with course 1a. Consists mainly of draughting. *Second semester; four hours a week.* Assistant Professor BURNSIDE and Mr. MCCULLOUGH.

Required of sophomores in civil engineering.

3a. Strength of Materials. Continuation of course 1b. *First eight weeks of the first semester; M., Tu., W., Th., F., at* 10 *or* 11.

3b. Dynamics. Relates principally to rigid bodies. *Last ten weeks of the first semester; M., Tu., W., Th., F., at* 10 *or* 11. Professor MAURER, Assistant Professor BURNSIDE, and Mr. MOORE.

Required of juniors in engineering.

4. Advanced Mechanics. A course supplementary to the statics and dynamics required of engineers. *First semester; two hours a week.* Assistant Professor BURNSIDE.

5. Advanced Mechanics of Materials. An elaboration of the required course in this subject. *Second semester; two hours a week.* Professor MAURER.

6. Elements of Mechanics. Involving no calculus; algebra and trigonometry are prerequisites. A general course, with emphasis on special topics. *First semester; three times a week.* Professor MAURER.

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The Materials of Construction.

PROFESSOR TURNEAURE, PROFESSOR RICHTER, MR. HAASE, AND MR. HUELS.

1. A review of the principles of mechanics applicable to the strength of material at rupture, the methods of manufacture, the methods of testing, and the physical properties of the materials of engineering construction. *Three hours per week; repeated each semester.* Professor TURNEAURE.

   Required of all juniors in engineering.

2. Testing of Materials of Construction. Each student is required to make a definite series of tests of structural materials. *First semester; three hours per week.* Required of seniors in mechanical engineering and juniors in civil engineering. *Second semester; three hours per week.* Required of seniors in electrical engineering and juniors in civil engineering. Professor RICHTER, Mr. HAASE, and Mr. HUELS.

3. Testing Materials. An advanced course will be offered, the special line of work to be agreed upon after consultation with the professors in charge. *M., W., hours to be assigned.* Professor RICHTER.

   Open to graduate students and to those students who have completed course 2.

Topographic and Geodetic Engineering.

ASSISTANT PROFESSOR SMITH AND MR. M'CULLOUGH.

1. Topographic Drawing and Freehand Lettering. *First semester; second half, 48 hours in draughting room.*

   Required of sophomores in civil and sanitary engineering.

2. Elementary Surveying. Text: Johnson *Surveying* and Smith's *Field Manual. Throughout the year; first nine weeks of first semester and last half of second semester; two-fifths credit.*

   Required of freshmen for one semester in civil and sanitary engineering.

3. Elementary Surveying. This course is a continuation of course 2, and includes the field and office work of a variety of practical problems in the use of the engineer's transit and level. *First semester; recitations two hours per week;*

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field work first nine weeks, 51 hours; three and one-half fifths credit.

Required of sophomores in civil and sanitary engineering.

4. Advanced Surveying. This course is a continuation of course 3, and includes a study of the higher instruments of precision, and their use in topographic and hydrographic survey. *Second semester; recitations two hours per week, first thirteen weeks; field work, 50 hours, last eight weeks; three and one-half fifths credit.*

Required of sophomores in civil and sanitary engineering.

5. Elementary Geodesy. Text: Johnson's *Surveying. Second semester; M., W., at 10.*

Required of juniors in civil and sanitary engineering.

6. Trigonometrical Survey. This course furnishes the necessary field work for illustrating course 5. Each year a portion of the neighboring lake region will be covered by an accurate triangulation, and also by a topographic and hydrographic survey. Survey begins the Monday of examination week and continues for two weeks (120 hours). Professor SMITH, Mr. MCCULLOUGH, and Mr. WILLIAMS.

Required of sophomores and juniors in civil and sanitary engineering.

7. Advanced Geodesy. Lectures, assigned readings, field work. Text: Wright's *Adjustment of Observations. First semester; two hours per week.*

Elective for seniors in civil engineering and for graduates who have taken courses 2, 3, 4, and 5, or their equivalents.

8. Short Course in Surveying. This course is planned to meet the demands of mechanical engineering and electrical engineering students for a general study of the subject, including the use of both transit and level. *First semester; three-fifths credit.* Elective.

9. Rapid Topography. This course is adapted for training topographers for the United States Geological Survey.

Elective for seniors in civil engineering and for others who have had course 2.

10. Mining Surveys. Field and office work for an underground survey. *Second semester;* (60 *field hours.*)

Elective for students who have had topographic engineering 2 and 3.

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11. City Surveying, Topographic and Cadastal. Lectures, assigned readings, and field work. *Two hours a week.*

Elective for juniors or seniors in sanitary engineering.

Railway Engineering.

PROFESSOR TAYLOR AND MR. WILLIAMS.

1. Railway Surveying. The theory and practice in field and office, necessary to survey and construct a new railway line, and to improve or reconstruct an old one. *First semester; full study; class-room, twice a week;* 108 *hours field and office work.*
3. Maintenance of Way. *Second semester; Tu., Th., at* 11; 32 *hours in the class-room.*

Required of juniors in civil and sanitary engineering.

4. A short course in the above subjects, especially adapted to city and interurban railways, and including masonry constructions and foundations, is offered as an elective to those who have had course 2 in topographical engineering. *First semester;* 18 *hours in class-room and* 36 *hours in the field and office.*
5. Railway Economics. *First semester;* 36 *hours in class-room.*

Required of seniors in civil engineering.

7. Tunneling and Substructures. The various methods of tunneling, shaft sinking, ordinary and deep foundation work. *Last half of second semester; M., W., F., at* 9; 24 *hours in class-room.*

Required of seniors in civil engineering.

8. For course in railway transportation, see course 15 under the head Economic History, which is offered as an elective to seniors and graduates in civil engineering.

Rivers and Canals.

PROFESSOR TAYLOR.

1. River and Harbor Improvement and Canal Construction. *Second semester; M., W., F., at* 11 *for the first half of the semester;* 24 *hours in class-room.*

Required of seniors in civil engineering.

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Hydraulic Engineering.

PROFESSOR BULL, PROFESSOR MAURER, PROFESSOR RICHTER, AND MR. M'PHERSON.

1. Hydraulics. Civil engineering students: *First semester; two hours per week, at* 9; mechanical and electrical engineering students: *Second semester; two hours per week, at* 9. Required of juniors in engineering. Professor MAURER.
2. Hydraulic Motors and Pumping Machinery. *Second semester.* Required of juniors in mechanical and electrical engineering. *M., Tu., W., Th., at* 8. *Eleven weeks during second semester* (45 *hours in class-room*). Professor BULL.
3. Hydraulic Laboratory. (30 *hours in laboratory.*) Required of juniors in civil and mechanical engineering. Civil engineering students: *First semester, last nine weeks;* mechanical engineering students: *second semester.* Professor RICHTER and Mr. MCPHERSON.

   Required of seniors in electrical engineering during the first nine weeks of the first semester.

Structural Engineering.

PROFESSOR DUFOUR, PROFESSOR TAYLOR, MR. MOORE, AND MR. WILLIAMS.

1. Structural Details. The designing of simple forms of members and of joints in wood and iron, and of wooden roof and bridge trusses. *First semester; draughting four hours per week.* Professor DUFOUR and Mr. MOORE.

   Required of juniors in civil engineering.
2. Masonry Construction. Theory governing the design of masonry structures and foundations. *Second semester;* 36 *hours in class-room.* Professor TAYLOR.

   Required of juniors in civil and sanitary engineering.
3. Engineering architecture. Treats of those principles of artistic design applicable to engineering structures, especially those of masonry. *Second semester; four lectures in connection with course* 4.
4. Masonry Arches, Dams, and Stereotomy.

   a. Arches. Discussion of the theory of the stability of masonry arches, followed by the complete design of an arch with specifications and estimates of cost. *Second semester; two-fifths study.*

   Required of juniors in civil and sanitary engineering.

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b. Dams; Stereotomy. A design for high masonry dam is made, followed by several problems in stereotomy. *First semester; three-fifths study.* Professor TAYLOR and Mr. WILLIAMS.

Required of seniors in civil and sanitary engineering.

5. Bridge Stresses.

a. Simple Bridge Trusses. *Second semester; three times a week.* Professor DUFOUR.

Required of juniors in civil and sanitary engineering.

b. Suspension, Swing, Cantilever, and Arch Bridges. *First semester; twice a week.* Professor DUFOUR.

Required of seniors in civil engineering.

6. Bridge Design. Theoretical considerations. *First semester; once a week.* Professor DUFOUR.

Required of seniors in civil and sanitary engineering.

7. Designs and Estimates. In this course each student makes a complete design of one structure of each class mentioned below, prepares detail drawings, and makes an estimate of the quantity of [illegible] and cost [illegible] complete working drawings are made [illegible] one structure [illegible]

7a. Roof Trusses [illegible] Graphical [illegible] *hours in* [illegible] room. Mr. MOORE.

Required of [illegible]

7b. Riveted [illegible] *hours* [illegible]

Require[illegible]

7c. Swing [illegible] ma[illegible] P[illegible] E[illegible]

8. A[illegible]

Municipal and Sanitary Engineering.

PROFESSOR DUFOUR AND PROFESSOR TAYLOR.

1. Water Supply Engineering. *First semester; thre*
   week. Professor DuFour.
2. Required of seniors in civil and sanitary engineering
   Sanitary Engineering. Sewerage and sewage dispos
3. *Second semester; three times a week.* Professor
   Required of seniors in civil and sanitary engineering.
   Designs of Water Supply and Sewerage Systems. C
   and purification plants. *First and second semester*
   hours' draughting a week. Professor DuFour.
4. Required of seniors in sanitary engineering; elect
   others.
   Roads and Pavements. *Second semester;* Tu., Th.
   Prof. TAYLOR.

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b. Dams; Stereotomy. A design for high masonry dam is made, followed by several problems in stereotomy. *First semester; three-fifths study.* Professor TAYLOR and Mr. WILLIAMS.

Required of seniors in civil and sanitary engineering.

5. Bridge Stresses.

a. Simple Bridge Trusses. *Second semester; three times a week.* Professor DUFOUR.

Required of juniors in civil and sanitary engineering.

b. Suspension, Swing, Cantilever, and Arch Bridges. *First semester; twice a week.* Professor DUFOUR.

Required of seniors in civil engineering.

6. Bridge Design. Theoretical considerations. *First semester; once a week.* Professor DUFOUR.

Required of seniors in civil and sanitary engineering.

7. Designs and Estimates. In this course each student makes a complete design of one structure of each class mentioned below, prepares detail drawings, and makes an estimate of the quantity of material and cost; complete working drawings are made of at least one structure.

7a. Roof Trusses and Plate Girders. *Second semester; 96 hours in draughting room.* Professor DUFOUR and Mr. MOORE.

Required of seniors in civil and sanitary engineering.

7b. Riveted and Pin-Connected Trusses. *First semester; 96 hours in draughting room.* Professor DUFOUR.

Required of seniors in civil and sanitary engineering.

7c. Swing Bridges. Design of truss, turntable, and operating machinery. *Second semester; 72 hours in draughting room.* Professor DUFOUR.

Elective for seniors and graduates in civil engineering.

8. Advanced Theory and Experimental Work. Higher structures, secondary stresses, and tests on bridges under moving loads. *Two hours a week, one or two semesters.* Professor DUFOUR.

Open to seniors and graduates.

9. Structural Design. Short general course in the designing of roofs and buildings. *Second semester; three times a week.* Professor DUFOUR.

Elective for students in electrical and mechanical engineering who have had mechanics 3.

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Municipal and Sanitary Engineering.

PROFESSOR DUFOUR AND PROFESSOR TAYLOR.

1. Water Supply Engineering. *First semester; three times a week.* Professor DUFOUR.
   Required of seniors in civil and sanitary engineering.
2. Sanitary Engineering. Sewerage and sewage disposal works. *Second semester; three times a week.* Professor DUFOUR.
   Required of seniors in civil and sanitary engineering.
3. Designs of Water Supply and Sewerage Systems. Complete designs and estimates of water supply and sewerage systems and purification plants. *First and second semesters; four hours' draughting a week.* Professor DUFOUR.
   Required of seniors in sanitary engineering; elective for others.
4. Roads and Pavements. *Second semester; Tu., Th., at* 11. Professor TAYLOR.

Steam Engineering.

PROFESSOR BULL AND MR. THORKELSON.

1. Thermodynamics. This course covers those principles of the mechanical theory of heat which are preliminary to the study of the various kinds of heat engines. *First semester, first ten weeks; M., Tu., W., Th., F., at* 12 (50 *hours in class room*). Mr. THORKELSON.
   Required of juniors in mechanical engineering.
2. Theory of Heat Engines. The study is partly given by lectures; for a large part of the work Peabody's *Thermodynamics* is used. *First semester, last eight weeks; M., Tu., W., Th., F., at* 12 (40 *hours in class-room*). Mr. THORKELSON.
   Required of juniors in mechanical engineering.
3. Steam Boilers. The general subject of combustion and its application to steam boilers. Peabody's and Miller's *Steam Boilers.* The study is partly taught by lectures. *Second semester, last nine weeks; Tu., W., Th., F., at* 9 (36 *hours in class-room*). Mr. THORKELSON.
   Required of juniors in mechanical engineering; open to all who have had either course 1 or course 6.
4. Valve Gears of Steam Engines. Peabody's *Valve Gears for Steam Engines. Second semester, first nine weeks; Tu., W., Th., F., at* 9 (36 *hours in class-room*). Mr. THORKELSON.
   Required of juniors in mechanical engineering.

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5. Design of the Steam Engine. Taught by lectures, supplemented by the work in the draughting room, where each student is required to work out a complete problem. Class work: *First semester, Tu., Th., at* 9; *second semester, Tu., Th., at* 11 (72 *hours in class-room*). Draughting: *First semester, M., W., F.,* 8 *to* 10; *second semester, M., W., F.,* 11 *to* 1 (216 *hours in draughting room*). Professor BULL.

Required of seniors in mechanical engineering.

6. Short Course in Thermodynamics, the Steam Engine, and the Steam Boiler. *First and second semesters; twice a week,* (72 *hours in class room*). Professor BULL and Mr. THORKELSON.

Required of juniors in electrical engineering.

7. Course in Steam Engineering for Civil Engineers. *First semester, first twelve weeks; three times a week;* 36 *hours.* Mr. THORKELSON.

Required or juniors in civil engineering, and of seniors in sanitary engineering and in the course of applied electrochemistry.

8. Heating and Ventilation. *First semester; M., W., F.,* 36 *hours.* Professor BULL.

9. Gas and Gasoline Engines. Treated both from a theoretical and an experimental point of view. *Second semester; three times a week* (54 *hours in class-room.*) Professor BULL.

10. Advanced Course in Steam Engineering. Lectures and assigned readings. *First and second semesters; M., W., F., at hours to be arranged.* Professor BULL.

Open to graduate students and to those who have completed courses 1, 2, 3, 4, and 5 in steam engineering.

11. Compressed Air and Its Application. *Second semester; two hours a week.* Mr. THORKELSON.

Elective for all who have had a course in thermodynamics.

12. Steam Turbines. Lectures on theory and origin. *First semester; twice a week.* Professor BULL.

Open to students who have had a course in thermodynamics.

Mechanical Laboratory.

PROFESSOR RICHTER, MR. M'PHERSON, AND MR. HUELS.

1. Calibration of Instruments. Oil testing and the determination of efficiencies of simple machines. *Four hours a week*

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during the last nine weeks of the first semester. Required of juniors in mechanical engineering. *Three hours a week during the second semester.* Required of juniors in mechanical and electrical engineering.

2. Determination of the Efficiencies of and Losses Occurring in the Steam Boiler, and Steam, Gas, and Gasoline Engines, Air compressors, Refrigerating plants, Transmission of Power, etc. The class makes a complete 24-hour test of a large power plant not connected with the University. *Four hours a week during the last nine weeks of the first semester, and three hours a week during the second semester of the junior year. Also three hours a week during the first semester of the senior year.* Required of juniors and seniors in mechanical engineering. *Three hours a week during the second semester, junior year, and first semester, senior year.* Required of juniors and seniors in electrical engineering.

3. Abridged Course for Civil Engineers. *Three hours a week during the last twelve weeks of the first semester.*

Required of juniors in civil engineering, of seniors in sanitary engineering, and in the course of applied electrochemistry.

3. Advanced Courses in Laboratory Work. Advanced courses will be offered in any of the different lines of experimental work, to conform with the special line of work the student wishes to follow. Stress will be laid on original research and investigation. *Tu., Th., at hours to be assigned.* Professor RICHTER.

Open to graduate students and to those who have completed the required courses in the line they wish to follow.

Machine Design.

PROFESSOR MACK AND ASSISTANT PROFESSOR ZIMMERMAN.

1. Kinematics of Mechanisms. The relative motions of machine parts, including belting, toothed gears, cams, and linkages. *First semester,* electrical engineers; *second semester,* mechanical engineers; *two hours in class-room and four hours' draughting per week.* Assistant Professor ZIMMERMAN.

Required of sophomores in mechanical and electrical engineering.

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3. Elementary Machine Design. A continuation of mechanical drawing and kinematics. *First semester; one lecture, one recitation, and six hours in draughting room* for electrical engineering students, and *one lecture, one recitation, and eight hours in draughting room a week* for mechanical engineering students. Professor MACK.

Required of juniors in mechanical and electrical engineering.

4. Machine Elements and Power of Transmission Devices. The form, strength, and proportions of the frames and moving parts of machines are studied in connection with the stresses due to the load supported, the moving parts, and the work done by the machine. *Second semester; two hours in class-room and six hours' draughting a week.* Professor MACK.

Required of juniors in mechanical engineering.

5. Continuation of course 4, and design of complete machines of different types, including punching machinery, machine tools, special and automatic machinery. A study is made of various methods of construction relative to cost, facilities, etc. *Throughout the year; two hours' class work and six hours' draughting a week.* Professor MACK.

Elective for seniors in mechanical engineering.

6. Patent Office Drawing. A course giving practice in the preparation of drawings required by the U. S. Patent Office. *Amount and time arranged upon consultation.* Professor MACK.

Open to all who have had course 1 in mechanical drawing.

7. Special and Automatic Machinery. *Four hours draughting a week.* Professor MACK.

Elective for seniors in mechanical engineering.

8. General Survey of Kinematics and Elements of Machine Design. Practice in making of working drawings. *Throughout the year; one hour class-work and four hours draughting a week.* Assistant Professor ZIMMERMAN.

Elective for general engineering students.

9. Similar to course 8, but suited to the requirements of students in civil and sanitary engineering. *Throughout the year; one hour class-work and four hours draughting a week.* Professor MACK.

Elective for juniors and seniors in civil and sanitary engineering.

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10. Mechanical Engineering Seminary. The seminary gives an opportunity for the study and discussion of general and special features and problems which are not included in regular courses. The current mechanical engineering literature is regularly reviewed.

Elective for seniors in mechanical and electrical engineering. *Throughout the year; two hours a week.* Professors BULL and MACK.

Applied Electromagnetism and the Construction of Dynamos.

ASSISTANT PROFESSOR SWENSON, ASSISTANT PROFESSOR SHUSTER, AND MR. WATSON.

1. Electromagnets and Dynamos. A discussion of the simple forms of electromagnets; the development of the laws of magnetization by electric currents; the laws of simple magnetic circuits and the windings of electromagnets; the practical design, construction, management and testing of dynamos. *Three times a week throughout the year.* Assistant Professor SWENSON.

Required of juniors in electrical engineering and in applied electrochemistry.

2. Testing Direct-Current Dynamos. Laboratory work with generators, motors, and accessory apparatus. *Twice a week throughout the year.* Assistant Professor SHUSTER and Mr. WATSON.

Required of juniors in electrical engineering and applied electrochemistry during second semester and of seniors during first semester. Required of seniors in mechanical engineering during first semester.

3. Electrical Machinery and Appliances. A short course in the theory, construction, management, and testing of direct-current generators, motors, and sundry appliances. *Three times a week during the first semester, and twice a week during the second semester.* Assistant Professor SWENSON.

Required of seniors in mechanical engineering during the first semester and elective during the second semester.

4. Design and Construction of Large Direct-Current Dynamos. By seminary method, following the treatment of the subject outlined by Fischer-Hinnen and E. Arnold. This course includes the working out of complete designs. *Either a*

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three or five-hour course throughout the year. Assistant Professor SWENSON.

Open to graduates and others who have had the equivalent of courses 1 (or 3) and 2.

Alternating Currents and Alternating-Current Machinery.

PROFESSOR JACKSON, ASSISTANT PROFESSOR SHUSTER, AND MR. WATSON.

1. Theory and Application of Single-Phase Alternating Currents. The theory of the generation and utilization of alternating electric currents; the design, construction, and operation of single-phase alternating-current dynamos and transformers; and methods for testing alternating-current machinery. *Three times a week during the first semester, and once a week during the second semester.* Professor JACKSON.

   Required of seniors in electrical engineering and applied electrochemistry. Elective for graduates.

2. Testing Alternating-Current Machinery and Appliances. The testing and operation in the laboratory of single-phase alternating-current generators, motors, transformers, meters, and other appliances. *Twice a week throughout the year.* Assistant Professor SHUSTER and Mr. WATSON.

   Required of seniors in electrical engineering and applied electrochemistry. Elective for graduates.

3. Elementary Polyphase Currents. Following the treatment in Jackson's *Alternating Currents and Alternating-Current Machinery. Second semester; twice a week.* Professor JACKSON.

   Open to students who have had the equivalent of courses 1 and 2.

4. Testing Polyphase Machinery and Appliances in the Laboratory. *Second semester; once a week.* Assistant Professor SHUSTER and Mr. WATSON.

   Open to students who are pursuing or have completed course 3.

5. Vector Theory of Alternating Currents. Open to adequately prepared students who desire to obtain a reasonably brief vector treatment of alternating currents and the properties of alternating-current circuits. *Once a week throughout the year.* Omitted in 1903-04. Professor JACKSON.

   Open to seniors and graduates.

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6. Advanced Course in Alternating Currents (including Polyphase Currents and Machinery). Lectures treating in detail the properties of alternating-current circuits and machinery, including the effects of resonance, protecting the circuits from lightning, etc. The methods of vector algebra are used throughout the course. *Three times a week throughout the year.* Two hours of laboratory work may be elected in addition. Professor JACKSON.

   Open to graduates and others with requisite preparation.

7. Elementary Applied Alternating Currents. A short course in the theory, construction, management, and testing of alternating-current machinery and applances. *Second semester; three times a week.* Professor JACKSON.

   Required of seniors in mechanical engineering. Open to all who have completed the equivalent of one semester of applied electromagnetism 3.

Applied Electrochemistry and Electrometallurgy.

ASSISTANT PROFESSOR BURGESS, AND MR. ZIMMERMAN.

1. Laws, Principles, and Theories Involved in Electrolytic Phenomena, and their application in the electro-deposition of metals for plating, electrotyping, and refining, and in electrochemical generation and storage of electrical energy. Classroom and laboratory instruction. Must be preceded by courses in chemistry. *First semester; five times a week.* Assistant Professor BURGESS and Mr. ZIMMERMAN.

   Required of seniors in applied electrochemistry. Open to seniors and graduates.

2. Industrial Applications of Electrochemistry. A study of the various electrochemical and electrothermal products and processes which have become of technical importance. *Second semester; twice a week in class, and two or more times a week in laboratory.* Assistant Professor BURGESS and Mr. ZIMMERMAN.

   Required of seniors in applied electrochemistry. Open to all students who have completed course 1.

3. Laboratory Work. Lines of experimental investigation assigned by the instructors, together with occasional conferences and written dissertations. *Three or five times a week throughout the year.* Assistant Professor BURGESS.

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Elective for students who have completed courses 1 and 2 and the course in theoretical electrochemistry.

4. Electricity Applied to the Treatment of Metal Surfaces. Electrolytic principles involved in the corrosion of metals; methods for preventing corrosion, including electroplating, galvanizing and cleaning metal surfaces. *First semester; once a week.* Assistant Professor BURGESS and Mr. ZIMMERMAN.

Elective for students in civil and mechanical engineering.

5. Chemical Machinery and Appliances. Consideration of machinery and appliances used in the chemical industries, and chemical engineering problems. *Second semester; twice a week.* Assistant Professor BURGESS.

Required for seniors in applied electrochemistry. Open to seniors and graduates.

Electrical Installations.

PROFESSOR JACKSON, ASSISTANT PROFESSOR SWENSON, AND MR. SHAAD.

2. Electrical Testing. The construction, testing, maintenance, and operation of lines and appliances, used in telephony, telegraphy, and electric signalling. *Second semester; three times a week.* Mr. SHAAD.

Required of juniors in electrical engineering.

3. Testing Wires and Cables. Laboratory practice in insulation and breakdown tests, location of faults, testing insulators, etc. Study of the phenomena produced by high pressures on electric circuits. *First semester; twice a week.* Mr. SHAAD.

Open to seniors and graduates.

4. Electric Lighting and Transmission of Power. Theory and practice in the construction and operation of lines. The construction of appliances for the transmission and distribution of electrical power. *Second semester; three times a week.* Mr. SHAAD.

Open to seniors and graduates. Required of seniors in applied electrochemistry.

5. Graduate Conference. A conference or seminary for the detailed study of engineering problems.

Open to seniors and graduates.

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6. Electric Railways. The road-bed, rolling stock, electric circuits, and power plants. Location, construction and operation. *Second semester; three times a week.* Mr. SHAAD.

Open to seniors and graduates.

7. Electricity in Mining and Quarrying. The practice in mining and quarrying where electrical machinery can be satisfactorily applied. *First semester; once a week.* Professor JACKSON.

Open to seniors and graduates.

8. Central Station, Design, Management, and Estimates. *First semester, twice a week; second semester, three times a week.* Professor JACKSON.

Open to seniors and graduates.

9. Inspection Tours. An inspection tour to large industrial centers is made during the first semester. Each student is expected to accompany one of these parties during the last two years of his course. The tours comprise visits to Milwaukee, Chicago, Pittsburg, Niagara Falls, and other manufacturing centers, for the purpose of inspecting manufacturing plants and great engineering works under operation or construction.

10. Illumination and Photometry. The distribution and measurement of light and comparison of sources of illumiation. Manufacture and use of electric lamps. *First semester; three times a week.* Mr. SHAAD.

Open to seniors and graduates.

11. Elements of Electric Lighting and Power Distribution. A short general course particularly designed for students in civil engineering. *First semester, twice a week; second semester, four times a week.* Assistant Professor SWENSON.

Open to juniors and seniors.

Engineering Contracts and Specifications.

PROFESSOR TAYLOR.

The law of contracts as applied to engineering work, together with the typical forms of specifications governing both the commercial and technichal features of engineering construction, and of all the related documents pertaining to engin-

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eering contracts. *Second semester; three hours a week for six weeks.*

Required of all seniors.

Shop Work.

PROFESSOR KING, MR. LOTTES, MR. KRATSCH, MR. ANDERSON; MR. MCINTOSH, MR. HANKINSON, AND MR. BONN.

1. Bench Work in Wood. *Twice a week, first or second semester;* 36 *hours; one-fifth credit.*
   Required of freshmen in mechanical and electrical engineering.
2. Lathe, Pattern, and Foundry Work. 36 *hours; one-fifth credit.*
   Required of freshmen in mechanical and electrical engineering.
3. Bench Work in Iron. *First semester;* 36 *hours; one-fifth credit.*
   Required of sophomores in mechanical engineering.
4. Production of Flat Surfaces and Straight Edges. Training in the use of file and scraper on surfaces of large area. *First semester;* 18 *hours.*
   Required of sophomores in mechanical engineering.
5. Machine Work in Iron. *First semester;* 36 *hours; one-fifth credit.*
   Required of sophomores in mechanical and juniors in electrical engineering.
6. Practice on the Planing and Milling Machines. *Second semester;* 36 *hours; one-fifth credit.*
   Required of sophomores in mechanical and juniors in electrical engineering.
7. Forge Work. *First semester; sophomore mechanical engineers,* 54 *hours, one and one-half fifths credit: Second semester; sophomore electrical engineers,* 36 *hours, one-fifth credit.*
8. Practice at the Lathe and Milling Machine. *First semester;* 54 *hours; one and one-half fifths credit.*
   Required of juniors in mechanical and electrical engineering.
9. General Shop Practice and Tool Making. *First semester;* 90 *hours; two and one-half fifthts credit.*
   Required of juniors in mechanical and electrical engineering.

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10. Machine Construction. *Second semester;* 72 *hours; two-fifths credit.*

Required of juniors in mechanical engineering.

11. Lectures on the Development of the Locomotive. 18 *hours; one-half fifth credit.*

Required of juniors in mechanical engineering.

12. Construction and Pattern Work. Practice in pattern work, and fitting together machine parts. *First semester;* 126 *hours; three and one-half fifths credit.*

Required of seniors in mechanical engineering.

13. This course is similar to course 10, but to it will be added practice in the erection of line shafting and machinery. Lectures on Shop Design, Erection, and Management will be given. *Second semester;* 36 *to* 180 *hours.*

Elective for seniors in mechanical and electrical engineering.

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THE COLLEGE OF LAW.

FACULTY.

CHARLES R. VAN HISE, Ph. D., LL. D., President of the University.
HARRY S. RICHARDS, Ph. B., LL. B., Dean. Professor of Law.
*EDWIN E. BRYANT, Professor of Law.
JAIRUS H. CARPENTER, LL. D., Jackson Professor of Law. (Emeritus).
BURR W. JONES, A. M., LL. B., Professor of Law.
JOHN M. OLIN, A. M., LL. B., Professor of Law.
ROBERT M. BASHFORD, A. M., LL. B., Professor of Law.
HOWARD L. SMITH, A. B., LL. B., Professor of Law.
EUGENE A. GILMORE, A. B., LL. B., Professor of Law.
EDWIN S. MACK, A. M., LL. B., Lecturer in Law.
E. RAY STEVENS, B. L., LL. B., Lecturer in Law.
LEVI H. FULLER, B. S., LL. B., Lecturer in Illinois Practice. (Professor of Illinois Practice and Procedure, Northwestern University).

History.

Plans for the organization of the College of Law were formulated in 1857, but owing to lack of funds the actual organization was not effected until 1868. The instructional staff was composed of members of the Dane County bar, and the Judges of the Supreme Court.

The course of study covered but one year, and no requirements as to admission were exacted. In 1874 candidates for admission were required to pass examinations in the ordinary English branches. In 1881, the course of study was extended to two years, and candidates were required to have a fair English education. In 1894, the course was extended to three years. In 1896, the requirements for admission were made the same as in the College of Letters and Science. At the time of its organization, the College occupied rooms in the capitol building.

It now occupies a commodious building especially erected for it in 1893.

*Died, August 10, 1903.

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Objects of the Course.

The College of Law offers a course of study covering a period of three years, and it is designed to teach the fundamental principles of the English and American law in a thorough manner, and fit the student for the active practice of the profession. In addition to the regular law courses, other departments of the University offer work in Comparative Constitutional Law, International Law, and Roman Law, which are open to law students.

Admission.

Students applying to the College of Law may be admitted, as are students in other departments, by either of two methods:

First, on certificates from accredited schools or colleges.

Second, on examination at the University.

The requirements for admission are the same as those for admission to the other colleges of the University, stated on p. 54.

The examinations are conducted at the same time and by the same members of the Faculty as the examination of candidates for admission to the College of Letters and Science.

In addition to the other entrance requirements, all candidates for admission to the College of Law, whether graduates of accredited high schools or not, are required to take the regular entrance examination in English, required for admission to the College of Letters and Science, (see p. 54) except,

(a) Students of the University who have already passed such examination.

(b) Graduates of other approved colleges and universities. But the Faculty may require any student to take additional work in English, if, in their judgment, it is necessary.

Those intending to apply for examination for admission as juniors, or for advanced standing, should notify the Registrar of the University before the beginning of the year, and apply for directions, as examinations cannot be taken later.

Examinations for admission to the Junior class will be held on June 2-3, and September 26-28, 1904, beginning at 9 o'clock.

While students are admitted as above, yet those who are able to satisfy only the minimum requirements for admission will probably find it difficult to do the work required in a satisfactory manner. Such further preparation as may be derived from a college course, or at least the first years of it, is strongly recommended.

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Advance Standing.

MIDDLE YEAR.

Candidates complying with the general requirements for admission to the University as above set out, will be admitted to the Middle year on passing satisfactory examinations in the subjects of the Junior year. Students who have graduated from the College of Letters and Science and who have elected and taken six hours per week in the Junior year of the College of Law, and passed successful examinations therein, will be admitted to the Middle year.

SENIOR YEAR.

Candidates complying with the general requirements for admission to the University as above stated will be admitted to the Senior year on passing satisfactory examinations in the subjects of the Junior and Middle years, and in addition thereto presenting certificates signed by the executive officer of a law school of good standing having a three years' course, showing at least one year's study as a regularly enrolled student of such school.

Candidates will be given equivalent credit for satisfactory work done in other law schools in good standing having a three years' course, upon presenting properly authenticated certificates of such work.

Time of Examinations.

Examinations for advanced standing will be held at the Law Building on the Monday, Tuesday, and Wednesday of the opening week of the University.

Time of Opening.

Lectures begin on the opening day of the semester. All students are required to enter at that time. Entrance after that date will be permitted only for good cause shown.

Graduation.

The degree of Bachelor of Laws will be conferred upon all candidates of good moral character and at least twenty-one years of age, who have complied with the following conditions:

1. Credit for at least 60 term hours (equivalent to ten hours per week during the entire course).

2. Residence of at least two years in a law school of good standing having a three years' course, one of which must have been

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in this College. But an average standing of not less than 85 per cent. will be required of all students seeking to graduate with less than three years' residence at this or some other law school.

3. Preparation and presentation of a satisfactory thesis of not less than 2,500 nor more than 3,500 words, on some legal topic selected under the direction of a member of the Faculty.

Admission to the Bar.

The statutes of the State provide that any resident graduate of the Law department of the University of Wisconsin shall be admitted to the bar of any court upon the production of his diploma, and may be admitted to the Supreme Court when not in session by an order signed by one of the Justices thereof and filed with the clerk. (R. S. Wis., sec. 2586.)

Under this statute and a rule of the Federal court, it is customary for the graduating class, on motion of a member of the Faculty, to be admitted to the Supreme Court of the State, and to the district and circuit courts of the United States, immediately upon graduation. This entitles them to admission to the bar of any court of record in Wisconsin and all federal courts.

COURSES OF INSTRUCTION.

The courses of instruction are arranged to present, as far as possible, the fundamental topics of the law during the junior year, and the specialized subjects during the middle and senior years.

Junior Year.

FIRST SEMESTER.

Contracts. Keener's *Cases on Contracts; two hours a week.* Professor RICHARDS.

Torts. *Cases on Torts;* Ames, Vol. 1 (2d edition); Smith, Vol. 2. *Three hours a week.* Professor GILMORE.

Domestic Relations. Browne on *Domestic Relations. One hour a week.* Professor JONES.

Commercial Paper. Tiedeman on *Commercial Paper. One hour a week.* Professor BASHFORD.

Real Property. Tiedeman on *Real Property. One hour a week.* Professor OLIN.

Public Officers. Mechem on *Public Officers. One hour a week.* Professor SMITH.

Common Law Pleading. Ames's *Cases on Common Law Pleading. One hour a week.* Mr. MACK.

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SECOND SEMESTER.

Contracts, continued. *Three hours a week.* Professor RICHARDS.

Torts, continued. *One hour a week.* Professor GILMORE.

Real Property, continued. *One hour a week.* Professor OLIN.

Domestic Relations, continued. *One hour a week.* Professor JONES.

Common Law Pleading, continued. *One hour a week.* Mr. MACK.

Commercial Paper, continued. *One hour a week.* Professor BASHFORD.

Agency. Wambaugh's *Cases on Agency. Two hours a week.* Professor GILMORE.

Middle Year.

FIRST SEMESTER.

Real Property. Tiedeman on *Real Property. One hour a week.* Professor OLIN.

Private Corporations. Clark on *Corporations. One hour a week.* Professor BASHFORD.

Evidence. Jones on *Evidence. One hour a week.* Professor JONES.

Equity and Equity Pleading. Keener's *Cases on Equity Jurisdiction. Three hours a week.* Professor SMITH.

Damages. Beale's *Cases on Damages. Two hours a week.* Professor RICHARDS.

Code Pleading and Practice. Bryant's *Code Pleading. Two hours a week.* Mr. STEVENS.

Partnership. Omitted 1903-04.

SECOND SEMESTER.

Property, continued. *One hour a week.* Professor OLIN.

Corporations, continued. *One hour a week.* Professor BASHFORD.

Evidence, continued. *One hour a week.* Professor JONES.

Equity and Equity Pleading, continued. *Three hours a week.* Professor SMITH.

Suretyship. Ames's *Cases on Suretyship. Two hours a week.* Professor GILMORE.

Code Practice. *Two hours a week; first half-semester.* Mr. STEVENS.

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Criminal Law and Procedure. Clark and Marshall on *Crimes. Two hours a week; second half-semester.* Mr. STEVENS.

Senior Year.

FIRST SEMESTER.

Evidence. Jones on *Evidence. One hour a week.* Professor JONES.

Banking. Lectures and select cases. *One hour a week.* Professor BASHFORD.

Wills. Cassoday on *Wills*, accompanied by Mechem's *Select Cases.* 14 *weeks; one hour a week.* Professor OLIN.

Torts. Bigelow on *Torts*, accompanied by Bigelow's *Cases on Torts*, Students' Series, 4 weeks; *one hour a week.* (This course will be omitted after 1904-05.) Professor OLIN.

Equity and Equity Pleading. Keener's *Cases on Equity Jurisdiction. Two hours a week.* Professor SMITH.

Bankruptcy and Fraudulent Conveyances. Williston's *Cases on Bankruptcy. One hour a week.* Mr. MACK.

Probate Law and Procedure, notes and select cases. *One hour a week.* Professor SMITH.

Constitutional Law. McClain's *Cases on Constitutional Law. Three hours a week.* Professor GILMORE.

Code Practice. *Four weeks; two hours a week.* Mr. STEVENS.

SECOND SEMESTER.

Evidence, continued. *One hour a week.* Professor JONES.

Torts, continued. *One hour a week.* Professor OLIN.

Insurance. Elliott on Insurance. *One hour a week.* Professor BASHFORD.

Bankruptcy and Fraudulent Conveyances, continued. *One hour a week.* Mr. MACK.

Quasi-Contracts. Keener's *Cases on Quasi-Contracts. Two hours a week.* Professor SMITH.

Probate Law and Procedure, continued. *One hour a week.* Professor SMITH.

Trusts. Ames's *Cases on Trusts. Two hours a week.* Professor RICHARDS.

Public Service Companies. Beale and Wyman's *Cases on Public Service Companies.* (Omitted 1903-04.)

Damages. Beale's Cases on Damages. *One hour a week.* Professor RICHARDS.

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Code Practice, continued. *First half semester; two hours a week.* Mr. STEVENS.

Illinois Practice. Mr. FULLER.

Elective Studies.

Students of the College of Law will be permitted to pursue studies in other departments of the University, subject to the following regulations:

Students of the junior class of the College of Law may elect studies in the College of Letters and Science and substitute them for studies in the junior year of the law course, to an amount not exceeding four hours per week for that year. The studies to be elected are to be designated by the College of Law.

Juniors and seniors in the College of Letters and Science will be permitted to elect, as a part of their undergraduate course, such studies in the College of Law as are specified on page 87.

Graduates of the College of Letters and Science who have elected and taken six hours per week for one year in the College of Law are to be admitted to the middle class of the College of Law. The fees for such elective studies in law are fixed by the Regents at $25 per annum.

Moot Courts and Law Clubs.

In addition to the instruction given in practice subjects as a part of the program of instruction, the student has ample opportunity for practice work in the system of practice courts conducted under the supervision of the Faculty.

The work in the practice courts is supplemented by law clubs, voluntary student organizations, in which legal questions are argued and decided.

Resources of the College of Law.

The College of Law is maintained from appropriations made for the purpose by the Regents, and from matriculation fees.

By the will of the late Judge Mortimer M. Jackson, funds to the amount of $20,000 were bequeathed to the University to found and maintain a Professorship of Law.

Law Building.

This building was constructed at a cost of $86,000, from brown Superior sandstone. It is amply provided with lecture and library

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rooms, and is equipped with the most approved systems of lighting, heating, and ventilation.

The Library.

The College of Law has an excellent library of the best law books and reports, comprising practically all the reports of the several states and the United States, and the English reports; also a large assortment of text books. This library is maintained by special appropriation of the legislature. The library is liberally administered, being accessible during each week-day from 8 A. M. to 10 P. M. The students are allowed free access to the books.

The law library of the State, the largest and most complete in the Northwest, is located in the Capitol building, and students in the College of Law are permitted, under reasonable regulations, to use its books for reference.

For information concerning the other libraries accessible to students, see p. 35.

Advantages of Location.

Unusual facilities for observing the practice of the various courts are afforded the students of the College of Law, from the fact that the Supreme court of the state is in session during most of the academic year, and the students have opportunity to listen to arguments by some of the ablest lawyers of the country.

Two terms of the United States District and Circuit courts are held here annually, and important cases, both in law and equity, are tried, illustrating the procedure in the federal courts.

The Circuit court of Dane county holds three terms annually, giving the students opportunity to observe the details of the practice under the code system.

The Municipal court of Dane county sits daily for the trial of criminal causes.

The legislature of the state holds biennial sessions.

The University.

The University of Wisconsin has a corps of instructors selected from the best scholars in their respective specialties. On obtaining the proper certificate from the dean, students of the College of Law may pursue studies for which they are prepared in other departments of the University, without extra charge, in so far as such studies do not interfere with their work in the College of

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Code Practice, continued. *First half semester; two hours a week.* Mr. Stevens.

Illinois Practice. Mr. Frank.

Elective Studies.

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[illegible] of the College of Law.

The Col[illegible] is maintained from appropriations for the p[illegible] the Regents By t[illegible] the late J[illegible] the am[illegible],000 was and [illegible] Profess[illegible]

This [illegible] superio[illegible]

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Law. The lectures on political economy, institutional history, and such special topics as the distribution of wealth, socialism, taxation, government of cities, criminology, public finance, and various other topics are of especial importance and value to the student of American law.

Societies.

The Forum and the Columbia are incorporated literary societies, composed entirely of law students. Each of them holds weekly meetings for debates and other literary exercises.

Fees and Expenses.

All fees are payable in advance at the office of the Secretary of the Regents. (See Tuition and Fees, p. 73.) Admission to membership in the classes is not permitted until the fees are paid. No deductions are made for absences, nor for failure to begin at the opening of the year, nor is extension of time allowed for payment of fees. Fees must in all cases be paid in advance.

Receipts showing the payment of tuition must be filed with the dean within ten days after entry.

It is most desirable that each student should provide himself with his own text-books and books of selected cases which are designated in the program of instruction. These books may be obtained from the Secretary of the Regents at a considerable discount from the quoted prices. The books required for the first year can be obtained for about $50 and for the second and third years for about $80.

The expenses of living are moderate. (See p. 76.)

Students desiring information in regard to boarding places, or general information as to expenses, should address their inquiries to the Secretary of the Regents.

A careful perusal of this general statement, it is believed, will supply all needed information; but should further inquiries as to admission, examination, etc., be necessary, they should be addressed to the Dean of the College of Law, Madison, Wis.

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THE COLLEGE OF AGRICULTURE.

STAFF.

CHARLES R. VAN HISE, Ph. D., LL. D., President of the University.
W. A. HENRY, B. Agr., Dean, Professor of Agriculture.
S. M. BABCOCK, Ph. D., Professor of Agricultural Chemistry.
E. H. FARRINGTON, M. S., Professor of Dairy Husbandry.
H. L. RUSSELL, Ph. D., Professor of Bacteriology.
A. R. WHITSON, B. S., Professor of Agricultural Physics.
E. P. SANDSTEN, Ph. D., Professor of Horticulture and Economic Entomology.
F. W. WOLL, M. S., Assistant Professor of Agricultural Chemistry.
R. A. MOORE, Assistant Professor of Agronomy.
G. C. HUMPHREY, B. S., Assistant Professor of Animal Husbandry.
*F. J. WELLS, B. S., Assistant Professor of Agricultural Physics.
†G. N. KNAPP, B. S., Assistant Professor of Farm Engineering.
A. S. ALEXANDER, M. D. C., V. S., Lecturer in Veterinary Science.
§FREDERIC CRANEFIELD, Instructor in Horticulture.
‡U. S. BAER, Instructor in Dairying.
J. C. BROWN, M. S., Assistant in Agricultural Chemistry.
G. A. OLSON, B. S., Assistant in Agricultural Chemistry.
W. B. RICHARDS, B. S., Assistant in Animal Husbandry.
FRANK KLEINHEINZ, Assistant in Animal Husbandry.
§J. R. DANKS, Assistant in Animal Husbandry.
JAMES HUTTON, Assistant in Animal Husbandry.
A. L. STONE, Assistant in Agronomy.
L. P. HASKINS, Assistant in Agricultural Physics.
H. A. RAMSEY, M. A., Assistant in Horticulture.
J H. GODFREY, Assistant in Creamery.
G. H. BENKENDORF, Assistant in Dairy Machinery.
J. W. MOORE, Assistant in Cheese Making.
MARTIN MEYER, Assistant in Pasteurizing.
PETER DUKLETH, Assistant in Farm Dairying.
FRED. MARTY, Assistant in Foreign Cheese making.
W. H. FREUND, Assistant in Cheese Making.
I. H. NOSOVITCH, Assistant in Creamery.
C. N. HOLKINS, Assistant in Creamery.
E. C. TOWNSEND, Assistant in Farm Dairying.

*Died March 1st, 1904.
†After March 1st, 1904.
‡Resigned December, 1903.
§Resigned April 1, 1904.

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General Information.

Four of the University buildings are devoted to agricultural instruction and research. The new central building of the College of Agriculture is situated at the west end of Observatory Hill, facing the south, in close proximity to the Dairy and Horticultural buildings. This structure, four stories in height, 200 feet in length by 64 feet in width, is constructed of Bedford limestone and buff pressed brick with red Spanish tile roof. In this building are the executive department of the College and Experiment Station, the Farmers' Institute headquarters, and the departments of agricultural chemistry, animal husbandry, bacteriology, and agronomy, with several additional rooms for departments not yet established. In the rear of the main structure is an octagon wing 66 feet in diameter, two stories in height. The first story is occupied by the agricultural library and reading-room. The upper story, with main floor and gallery, serves as the general auditorium for the College, with a seating capacity of 750.

Hiram Smith Hall is devoted to dairy instruction and research. The structure, of brick and stone, has a frontage of 103 feet by 48 feet in depth, and is two and three stories in height. In this building are rooms for offices, lectures, laboratory, creamery separators, farm dairying, cheese curing, butter-working, pasteurizing, refrigerator, etc.

The Horticulture-Physics building, three stories in height, has a frontage of 76 feet by 60 feet in depth. At the rear are greenhouses occupying a space 76x110 feet. The right wing of the building, with three greenhouses, each 22x76 feet in area, is devoted to horticulture. The left half of the building, together with its greenhouse, 44x76 feet, is devoted to instruction and investigation in the physics of agriculture.

The Agricultural College has its own heating plant, located north of and in close proximity to the Dairy building. This structure is 35x50 feet in area, two stories in height over a 16-foot basement. In the basement are five steam boilers of 370 horse-power capacity. Steam pipes passing through tunnels furnish heat to the several buildings. The first story of the heating plant is used as a laboratory for instruction in the care and management of the steam engine, the lining and placing of shafting, the setting of cream separators, the working of pumps, injectors, etc. The second floor is devoted to instruction in pipe-cutting, soldering, belt lacing, etc.

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About sixty rods west of the group of buildings above described are four large barns for the accommodation of horses, cattle, sheep, and swine. In the dairy barn is a steam-heated stock judging room 40x70 feet in area. There is also a building one story in height, 36x74 feet in area, sky-lighted and steam-heated, and divided into two rooms, with seats, for class instruction in stock judging.

The legislature of 1903 made provision for a department of farm engineering. Mr. G. N. Knapp, a graduate of the University, has been enployed to take charge of the department, his services beginning in March, 1904. During the season of 1904 a building for the farm engineering department will be erected and equipped with suitable machinery and other appliances. In this department instruction will be given in planning and erection of farm buildings, especially farm barns, in the care and management of farm motors, farm machinery, tools, etc.; also instruction in the laying out of farms, road building, etc.

The farm lands adjoining the University campus comprise about 125 acres. Two miles distant is a tract of 220 acres. Both tracts are devoted to research and to instruction.

By its association with the various University laboratories of science and the practical arts, open to agricultural students, with departments in which are taught all the foreign languages that contain much agricultural literature, with an active experiment station equipped with special laboratories and library, and with farms where practical tests are carried on, the College of Agriculture affords exceptional opportunities to those who desire to become agricultural experts.

Libraries.

The library contains 6,500 bound volumes and several hundred pamphlets relating strictly to agriculture. Students have access also to the various other libraries of the University and of the city.

Societies.

Short course and dairy students maintain literary societies. These organizations afford opportunity for drill in parliamentary practice, for training in declamation, debate, and essay writing, as well as for discussion of the many professional and practical questions relating to agriculture and dairying.

Students of the College of Agriculture, former and present, maintain an experiment association for the purpose of co-operating

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through an active experiment station, associated with numerous scientific laboratories. The special lines of study will be left largely to the selection of the student, subject to the approval of the agricultural faculty. It will be practicable to a large extent for such students to participate in experiments in progress, and, after suitable experience, to conduct independent investigations. When contributions of knowledge of permanent value are made they will be published through the bulletins of the experiment station under the name of the contributor.

THE LONG COURSE offers scientific training in agricultural chemistry, agricultural physics, horticulture, animal husbandry, dairying, and agricultural bacteriology. Besides the strictly professional branches, it embraces general training in chemistry, physics, botany, zoology, geology, bacteriology, and similar branches which have an application in agriculture. The field is so broad, however, that it is impossible for the student in four years to pursue all the courses offered in addition to acquiring the necessary fundamental studies, and hence a large liberty of selection is allowed.

THE SHORT COURSE is provided for those who can devote only a limited time to study, and who wish to return at once to the active operations of the farm, and therefore desire the greatest amount of directly useful knowledge that can be acquired in the brief time allowed.

THE DAIRY COURSE is designed for those who intend to operate creameries and cheese factories.

THE FARMERS' COURSE covers the brief period of two weeks in winter. It is designed for busy farmers and follows only lines of intensely practical instruction.

Terms of Admission.

GRADUATE COURSE IN AGRICULTURE. Graduates of this University and of other colleges and universities in good standing are admitted to this course without examination.

LONG COURSE IN AGRICULTURE. The requirements for admission to this course are the same as those for the courses in the College of Letters and Science. (See p. 55.)

SHORT COURSE IN AGRICULTURE. Students in this course must be at least sixteen years of age and have a good common school education. No entrance examinations are required, but those who come poorly prepared can not expect to receive the full benefits of the course.

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DAIRY COURSES. The terms of admission to the winter course are the same as for the short course, excepting that the candidates must have had not less than six months' experience in a creamery or cheese factory before entering the course. For admission to the summer course in dairying no previous experience is required.

SPECIAL STUDENTS IN AGRICULTURE. As many of the youth of the farming communities are not within reach of schools giving instruction in all the branches required for admission to the long course, limited concessions will be made to young men of exceptional strength and maturity, by which they will be permitted to enter the University as special students in agriculture.

FARMERS' COURSE. No examinations are required for admission to this course, but the candidate must be at least twenty-five years of age.

Degrees.

The degree of Bachelor of Science (agricultural course) is conferred upon students who successfully complete the long course in agriculture. The degree of Master of Science is conferred upon agricultural graduates who complete one year of advanced study at the University and present an acceptable thesis on a topic approved by the Faculty.

LONG COURSE IN AGRICULTURE.

Note.—The Long Course in Agriculture has been materially modified and the following outline of the work has been formally adopted, and takes effect in 1904-05. The detailed courses outlined under Departments of Instruction follow the courses as now given, but will be modified more or less as this new course takes effect.

Freshman Year.

FIRST SEMESTER.	Hrs. per Wk.
Chemistry 1	5
German 2s	4
Mathematics 1	3
English 1	3
Military Drill	2
Gymnastics	2

SECOND SEMESTER.	
Chemistry 1	5
German 2s	4
Mathematics 2	3
English 1	3

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	Hrs. per W'k.
Military Drill	2
Gymnastics	2

Sophomore Year.

FIRST SEMESTER.

German 3s	3
Biology 1	5
Physics 1	5
Chemistry 10	4
Military Drill	2
Gymnastics	2

SECOND SEMESTER.

German 3s	3
Biology 1	5
Physics 1	5
Vegetable Physiology	5
Military Drill	2
Gymnastics	2

Junior Year.

FIRST SEMESTER.

Agricultural Chemistry	5
Agricultural Physics	5
Bacteriology	5
Agricultural Economics and Farm Management	3

SECOND SEMESTER.

Required.

Farm Engineering	4

Electives.

Agricultural Chemistry	5
Agricultural Physics	5
Agricultural Bacteriology	5
Horticulture	5
Animal Husbandry	5
Dairying	5
Agricultural Engineering	5

From the above electives the student will choose a major, to begin with the second semester of the junior year and continue

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through the senior year—fifteen hours in all. The professor in whose department the major is taken will select a minor to the amount of ten hours. The student will elect not less than ten additional hours in the College of Agriculture, the total graduation requirements during the last three semesters being not less than forty-five unit hours.

Senior Year.

Continuation of elective course and preparation of thesis.

The total requirements for graduation are 120 unit hours.

DEPARTMENTS OF INSTRUCTION.

THE LONG COURSE IN AGRICULTURE.

Agricultural Chemistry.

PROFESSOR BABCOCK, ASSISTANT PROFESSOR WOLL, AND MR. BROWN.

1. Agricultural Chemistry. Lectures. *Twice a week; second semester.* Professor BABCOCK and Mr. BROWN.
2. The Chemistry of the Dairy. Lectures and laboratory practice. *First semester; once a week.* Professor BABCOCK and Mr. BROWN.
3. Agricultural Analysis. Laboratory work during the year. *Three times a week.* Assistant Professor WOLL and Mr. BROWN.
4. Advanced and Original Work. Laboratory work during the year. *Five times a week.* Professor BABCOCK, Assistant Professor WOLL, and Mr. BROWN.

Agricultural Physics.

PROFESSOR WHITSON, MR. STODDART, AND MR. HASKINS.

1. Soils. The course includes a general discussion of the origin and classification of soils, and of the influence of their physical, chemical, and biological conditions upon the growth of plants. *Five times a week; first semester.*
2. Drainage, Irrigation, and Cultivation. Field and laboratory work. *Three times a week; second semester.*
3. Climatology. A study of the distribution of heat, light, and precipitation, and of their influence on soils and crops. *Twice a week; second semester.*

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4. Advanced and original work in the origin and fertility of soils and their practical management. *Full study throughout the senior year.*

Horticulture.

PROFESSOR SANDSTEN, MR. CRANEFIELD, AND MR. RAMSEY.

1. General Principles of Horticulture. Lectures, recitations, and laboratory work. *Full study; first semester.*
2. Economic Horticulture. Instruction in the culture of the principal fruits and vegetables of our climate. Lectures, recitations, and laboratory work. *Five times a week; second semester.*
3. Aesthetic Horticulture. The principles of ornamental planting and of laying out gardens and pleasure grounds. Lectures and recitations. *Twice a week; second semester.*
4. Special investigation in subjects relating to the propagation and rearing of economic plants. Field and laboratory work. *Full study throughout the year.*
5. Economic Entomology. A brief study of injurious insects and best methods of combating them. Lectures and laboratory work. *Twice a week; second semester.*
6. Vegetable Physiology. Instruction to be given with special reference to horticultural and agricultural crops. Lectures and laboratory work. *Five times a week; second semester.*

Animal Husbandry.

PROFESSOR HENRY, ASSISTANT PROFESSOR HUMPHREY, DR. ALEXANDER, AND MR. RICHARDS.

1. The Breeds of Live Stock. Students taking this course are trained in selecting and judging live stock. *Five times a week; second semester.* Assistant Professor HUMPHREY.
2. Breeding. Principles and methods. Darwin's *Animals and Plants Under Domestication;* Warfield's *Cattle Breeding,* and Miles' *Stock Breeding. Five times a week; second semester.* Assistant Professor HUMPHREY.
3. Veterinary Science. References: Fred Smith's *Veterinary Physiology and Veterinary Hygiene;* Fleming's *Obstetrics;* Neumann's *Parasites and Parasitic Diseases;* Strangeway's *Anatomy.* Dr. ALEXANDER.
4. Feeds and Feeding. Henry's *Feeds and Feeding* and Jordan's *The Feeding of Animals. Five times a week; first semester.* Professor HENRY.

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5. Advanced Work in Feeding and Breeding. Having completed the previous course, the student will assist in conducting feeding and breeding investigations at the station. *Five times a week; one year.* Professor HENRY and Assistant Professor HUMPHREY.

Bacteriology.

PROFESSOR RUSSELL, ASSISTANT PROFESSOR FROST, AND MR. HASTINGS.

1. General Bacteriology. (See course 1, p. 164.) Lectures or equivalent. *Full study; first semester; M., W., F., at* 11. Professor RUSSELL and Assistant Professor FROST.
2. Dairy Bacteriology. The relation of bacteria to dairy problems. Laboratory work with conferences. *Full study; second semester.* Professor RUSSELL and Mr. HASTINGS.
3. Agricultural Bacteriology. Bacteria as affecting agricultural problems in general, including animal diseases. Laboratory work with references. *Full study; second semester.* Professor RUSSELL and Mr. HASTINGS.

Dairy Husbandry.

PROFESSOR FARRINGTON, MR. CARSON, AND ASSISTANTS.

1. Milk Inspection. Lectures and laboratory practice. *One hour a week.* Professor FARRINGTON and assistant.
2. Creamery Butter Making. Cream separation, cream ripening, churning, butter working, butter printing, etc. *Five hours a week.* Professor FARRINGTON and Mr. MEYER.
3. Cheese Making. Lectures and factory work in making and curing cheddar, Swiss, brick, limburger, and Edam cheese. *Five hours a week.* Professor FARRINGTON and assistant.
4. Dairy Machinery. Shop practice with engines, boilers, artificial refrigeration machinery, pipe fitting, etc. *One hour a week.* Professor FARRINGTON and Mr. BENKENDORF.
5. Milk and Cream Pasteurization. *One hour a week.* Professor FARRINGTON and assistant.

Agricultural Economics.

DR. TAYLOR.

26. The Elements of Agricultural Economics. This course treats of those economic principles which underlie the prosperity of the farmer and of all other classes in so far as they are dependent upon agriculture. The subject is divided into

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two parts. Part one considers the point of view of the farmer, and the discussion centers about those economic principles which underlie the carrying on of agriculture in such a manner as will enable the farmer to realize the largest net return for his efforts. Part two, from the point of view of the nation as a whole, attempts to discover those economic principles which should guide the agrarian statesman in his efforts to conserve and promote the agricultural interests of a country. *First semester; Tu., Th., at* 12.

27. Historical and Comparative Agriculture. This course consists of lectures and assigned readings on the agriculture of the Romans, on the development of agriculture in England and in the United States, and on the present status of agriculture in the most important countries, with an attempt to find the cause of historical changes and geographical differences. *Second semester; Tu., Th., at* 12.

THE SHORT COURSE IN AGRICULTURE.

This course covers two terms of fourteen weeks each, beginning the first of December, each year.

FIRST YEAR.

Twenty-one lectures in feeds and feeding. Professor HENRY.

Twenty-eight lectures in the breeds of live stock, with score-card practice additional in stock judging. Assistant Professor HUMPHREY.

Thirty-five lectures, with seventy hours' laboratory practice in agricultural physics. Professor WHITSON, Mr. STODDART, and Mr. HASKINS.

Thirty-five lectures, with seventy hours' laboratory practice in plant life. Professor SANDSTEN and Mr. RAMSEY.

Twenty-four lectures, with clinics in veterinary science. Dr. ALEXANDER.

Twelve lectures in dairying. Professor BABCOCK.

Seventy-two hours' practice in farm dairying and dairy laboratory. Mr. DUKLETH.

A course in farm bookkeeping. Mr. STONE.

Twenty-eight hours of recitation and drill in parliamentary practice. Assistant Professor MOORE.

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SECOND YEAR.

Twenty-eight lectures or equivalent in essay writing on animal nutrition. Professor HENRY.

Twenty-eight lectures in the breeds of live stock, with seventy-two hours' practice in stock judging. Assistant Professor HUMPHREY, Dr. ALEXANDER, and Mr. RICHARDS.

Seventy hours of lectures and laboratory practice in agricultural physics and meteorology. Professor WHITSON, Mr. STODDART, and Mr. HASKINS.

Seventy hours of lectures and laboratory practice in horticulture. Professor SANDSTEN and Mr. RAMSEY.

Thirty-five lectures and recitations in elementary agricultural chemistry. Professor BABCOCK.

Sixteen lectures, with demonstrations in veterinary science. Dr. ALEXANDER.

One hundred and twenty hours at workbench and forge. Professor KING.

Seventy hours of lectures and laboratory practice in agronomy. Assistant Professor MOORE.

Twelve lectures in agricultural economics. Dr. TAYLOR.

Twenty lectures in bacteriology as applied to agricultural conditions. Professor RUSSELL.

Students completing the studies of this course in a satisfactory manner are granted short course certificates.

An illustrated circular describing the short course in detail will be sent on application to Professor R. A. Moore, College of Agriculture, Madison, Wis.

COURSES IN DAIRYING.

Instruction in the winter course in dairying is divided as follows:

1. Lectures and class-room work.

Twenty lectures on the constitution of milk, the conditions which affect creaming and churning, methods of milk testing, the preservation of milk, etc. Professor BABCOCK.

Twenty-four lectures on creamery management and accounts. Professor FARRINGTON.

Sixteen lectures on practical cheese making.

Sixteen lectures, with demonstrations on the influence of bacteria in the dairy. Professor RUSSELL.

Lectures on heating, ventilation, and other physical problems directly connected with dairy practice. Professor WHITSON.

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Sixteen lectures and demonstrations on the care and management of the boiler and engine. Professor RICHTER.

Eight lectures on the feeding and management of dairy stock. Professor HENRY.

Eight lectures on breeding and selection of dairy stock. Assistant Professor HUMPHREY.

Eight exercises in parliamentary practice. Assistant Professor MOORE.

2. Milk testing. This embraces instruction in the laboratory in estimating the fat and other constituents in milk, butter, and cheese by methods adapted to the factory and factory operators. *Fifteen hours per week.* Professor FARRINGTON and assistants.
3. Butter Making. Butter making is carried on daily on the creamery plan. The student learns to operate the modern forms of power centrifugal separators and pasteurizing machines. They attend to the ripening of the cream, churning, and packing butter, carrying on all the operations as they would be conducted in a creamery. *Fifteen hours per week.* Professor FARRINGTON and assistants.
4. Cheese Making. In this course daily instruction is given in the manufacture of cheddar cheese, the operations being carried on as in the regular factory, the students being required to take careful notes and make reports upon the process. Special instruction is also given in the making of Swiss, brick, and limburger cheese. *Sixteen hours per week.* Mr. MARTY.
5. Dairy Machinery. This course provides instruction in firing and caring for boilers, running engines, putting up shafting, cutting and fitting iron pipe, belt lacing, soldering, etc. *Twenty-four hours per week.* Professor FARRINGTON and assistants.

THE SUMMER DAIRY COURSE.

In the summer course in dairying the student may enter at any time after March 1st, and remain for an indefinite period. No previous preparation is required. The student will assist in all of the different operations of the University creamery, thus gaining much practical experience. Laboratory exercises and theoretical instruction will be given as required.

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ADVANCED DAIRY WORK.

Being desirous of securing pupils who have had much experience in factory work before joining us, we offer the following inducements:

Such as can pass satisfactory examinations in the practical work of the creamery or cheese factory will be advanced early in the term to the experimental dairy section, where problems connected with this branch will be studied.

Advanced dairy instruction will consist of the following courses:

1. Instruction by Professor BABCOCK on milk and its products.
2. Experimental investigations in butter-making by Professor FARRINGTON.
3. Investigations in cheese production.
4. Dairy bacteriology by Professor RUSSELL. This work will include two lines:
   a. A special course in the preservation of milk and cream for commercial purposes.
   b. Students familiar with the use of the microscope will be admitted to the bacteriological laboratory for experimental work in dairy bacteriology.

Examinations and Certificates.

To secure a dairy certificate a student must have spent a full term in the Dairy School and successfully passed all examinations; and, further, he must have had not less than two seasons' experience in a creamery or cheese factory, one of which must follow the period spent in the Dairy School. During the second season the candidate will report the operations of his factory monthly on blanks, and have his work inspected by an authorized agent of the University.

This course opens about the first of November each year and lasts twelve weeks.

An illustrated circular giving additional information concerning the dairy course will be sent on application to Professor E. H. Farrington, Madison, Wis.

Farmers' Course.

Instruction in the farmers' course includes two lectures daily by professors and instructors connected with the College of Agriculture. The remainder of the day will be devoted to instruction in corn judging and the judging of live stock. To make the work more interesting and practical, a number of specialists are em-

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ployed as aids. For the winter course, Feb. 5 to 18, 1904, the following non-resident assistants were employed:

W. D. HOARD, Fort Atkinson, Wis.

H. C. TAYLOR, Orfordville, Wis.: Dairy Cows.

GEORGE MCKERROW, Sussex, Wis.: The Mutton Breeds of Sheep.

N. H. GENTRY, Sedalia, Mo.: Swine and Beef Cattle.

J. G. IMBODEN, Decatur, Ill.: Commercial and Nutritive Values of Different Parts of the Carcasses of Domestic Animals.

THE AGRICULTURAL EXPERIMENT STATION.

OFFICERS OF THE EXPERIMENT STATION.

CHARLES R. VAN HISE, President of the University.

W. A. HENRY, Director.

S. M. BABCOCK, Assistant Director and Chief Chemist.

H. L. RUSSELL, Bacteriologist.

E. H. FARRINGTON, Dairy Husbandman.

A. R. WHITSON, Agricultural Physicist.

E. P. SANDSTEN, Horticulturist.

F. W. WOLL, Chemist.

R. A. MOORE, Agronomist.

G. H. HUMPHREY, Animal Husbandman.

*F. J. WELLS, Assistant Agricultural Physicist.

†G. N. KNAPP, Agricultural Engineer.

‡W. C. STODDART, Assistant in Agricultural Physics.

§§FREDERIC CRANEFIELD, Assistant in Horticulture.

§W. J. CARSON, Assistant Dairy Husbandman.

E. G. HASTINGS, Assistant Bacteriologist.

J. C. BROWN, Assistant in Chemistry.

G. A. OLSON, Assistant in Chemistry.

W. B. RICHARDS, Assistant in Animal Husbandry.

FRANK KLEINHEINZ, Assistant in Animal Husbandry.

§§J. R. DANKS, Assistant in Animal Husbandry.

JAMES HUTTON, Assistant in Animal Husbandry.

L. P. HASKINS, Assistant in Cranberry Investigations, Agricultural Physics Department.

*Died March 1st, 1904.
†After March 1st, 1904.
‡After April 1st, 1904.
§After April 1st, 1904.
§§Resigned April 1st, 1904.

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H. A. RAMSEY, Assistant in Cranberry Investigations, Horticultural Department.
LESLIE H. ADAMS, Farm Superintendent.
IDA HERFURTH, Clerk.
SOPHIE M. BRIGGS, Librarian.

The purpose of the Experiment Station is the promotion of agricultural science by investigation and experimentation. In the choice of subjects it endeavors to select those which possess the greatest importance to the farmers of Wisconsin, so far as the facilities at hand permit. The endeavor at all times is to give the investigations a fundamental character in order that the results may be real contributions to agricultural science. The station is also a means of disseminating general and miscellaneous information on agricultural topics, and its staff cheerfully devotes the necessary time to private and public correspondence and to personal interviews.

By direction of the general government, which supplies a portion of the funds for maintaining the station, there are issued an annual report and frequent bulletins. Twenty reports and 112 bulletins have been issued to date. Fifteen thousand copies of the reports are printed annually, and the edition of the bulletins comprises from 5,000 to 20,000 copies. These bulletins and reports are free to all residents of the state upon application. The station mailing list now embraces about 13,000 names of farmers and others to whom the reports and bulletins are regularly sent.

FARMERS' INSTITUTES.

INSTITUTE STAFF.

GEORGE MCKERROW, Superintendent.
NELLIE E. GRIFFITHS, Clerk and Stenographer.

INSTITUTE CONDUCTORS.*

Corps No. 1—W. C. BRADLEY, Hudson.
Corps No. 2—L. E. SCOTT, Neenah.
Corps No. 3—R. J. COE, Fort Atkinson.
Corps No. 4—GEORGE WYLIE, Morrisonville.
Corps No. 5—F. H. SCRIBNER, Rosendale.

*Appointed each year.

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REGULAR ASSISTANTS.*

GEORGE C. HILL, Rosendale. DAVID IMRIE, Roberts.
D. B. FOSTER, Fairchild. L. P. MARTINY, North Freedom.
DELBERT UTTER, Caldwell.

OTHER ASSISTANTS.*

C. P. GOODRICH, Fort Atkinson. R. E. ROBERTS, Western Union.
THOMAS CONVEY, Ridgeway. MRS. ADDA F. HOWIE, Elm Grove.
A. A. ARNOLD, Galesville. H. M. CULBERTSON, Medina.
C. E. MATTESON, Pewaukee. JOHN L. HERBST, Sparta.
N. E. FRANCE, Platteville. E. L. ADERHOLD, Neenah.
E. C. JACOBS, Menomonie. E. NORDMAN, Polar.
MISS ADELLA SATER, Orfordville, Instructor in Cooking Schools.

The third division of work of the College of Agriculture is the instruction of farmers who are unable to come to the University for study. This is made possible through generous legislative provisions, by which a carefully supervised system of farmers' institutes is maintained. The institutes are in immediate charge of a superintendent, who elaborates and controls the organization and maintenance of the institutes. He is aided by special conductors who assist in perfecting details and carrying the whole into effect. Members of the agricultural faculty render as much assistance as is consistent with their other duties. Experts in different departments are engaged to present special important themes. Lecturers are often brought from other states to treat on specific topics in which they are recognized authorities. Local talent is used to some extent and not the least of the educational benefits is the development of latent ability in writing, speaking, and experimenting which has followed as a natural result from the interest awakened by this important stimulus.

During the institute season of 1903-04 one three-day, one hundred two-day, and ten one-day institutes will be held at as many places in the state. Cooking schools will be held at eleven points.

How to Secure an Institute.

Institutes are placed for the most part in localities which show the greatest interest in this movement. Application for institutes will be received by the superintendent and presented to the agricultural committee not later than Sept. 30. The committee goes over the list and carefully considers the needs and interests of

*Appointed each year.

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each locality, and places the institutes where, in its judgment, they will prove the most helpful. In the past there have been more applications for institutes than it was possible to supply. Applications should be received before Sept. 15 each year.

The Farmers' Institute Bulletin.

To disseminate still more widely the best matter presented and discussed at the institutes, and to give such material permanency for its own sake and for its historical value, a bulletin giving a stenographic report of the closing institute of each year is issued. Bulletin No. 17 contains a stenographic report of the closing institute held at Marshfield in March, 1903. Sixty thousand copies of this bulletin have been issued. Eight thousand cloth bound copies will be placed in the school district libraries of the state; 35,000 will be given to the farmers in attendance at the institutes, and the remainder distributed through cheese factories, creameries, etc. Copies will be sent to all applicants living within the state, upon receipt of 10 cents to pay postage and mailing, if paper covers are desired, and 25 cents for cloth-bound covers. To those outside of Wisconsin, 25 cents for paper covers and 40 cents for cloth-bound copies will be charged, to cover mailing and cost of publication.

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THE SCHOOL OF MUSIC.

STAFF OF INSTRUCTION.

CHARLES R. VAN HISE, Ph. D., LL. D., President of the University.
F. A. PARKER, *Director*, Musical History, Harmony, Counterpoint, and Organ.
ADA BIRD, Piano.
ALICE REGAN, Piano.
RUSSELL MCMURPHY, Piano.
WINIFRED CARD CURTIS, Piano.
MARY MAUD FOWLER, Piano.
ADELAIDE FORESMAN, Voice.
ELIAS A. BREDIN, Voice, Organ, and Theory.
GENEVIEVE CHURCH SMITH, Voice.
CHARLES NITSCHKE, Violin, 'Cello, and Other Orchestral Instruments.
ELIZABETH KEELEY ANDERSON, Harp.
FRANK CHARLES BACH, Mandolin.
MRS. MARY E. BRAND, Guitar and Banjo.
BESSIE BRAND, Secretary.

General Announcement.

It is the purpose of the School of Music to furnish superior facilities for the study of music in any or all of its departments, theoretical or practical. Instruction is offered in piano, organ, harp, singing, orchestral instruments, mandolin, guitar, and banjo, and in musical theory, choral practice, harmony, counterpoint, and composition. In the study of piano or singing (voice culture) instruction is given by means of private or individual lessons, or, should a sufficient number of students desire it, classes limited to three will be organized. In the study of other instruments, private lessons only are employed. In the theoretical studies students are recommended to join the University classes, but private lessons may be arranged for if preferred.

To meet the convenience of students residing either permanently or temporarily in distant parts of the city, an office and studios have been opened in the Kroncke building, in addition to those in Music Hall at the University. Applications for lessons may be

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made at either place, the lessons being given where it is found to best suit the convenience of instructor and student.

The lessons vary in length and number per week, for the purpose of adequately meeting the wants of all classes of students, from those who take a large amount of work in other departments of the University to those who devote themselves especially to the study of music with little or no collateral work. In like manner the fees for special instruction vary according to the length and frequency of lessons. A schedule of fees may be found on p. 271.

It should be observed that special instruction in vocal or instrumental music of any kind may be taken by students not otherwise connected with the University, and that such students are not required to pay the incidental fee.

The general classes in musical theory, harmony, counterpoint, history of music, and musical composition may be taken as electives by students of the College of Letters and Science, who will receive credit for them, as for other studies. These classes are likewise open to students of the other colleges and schools of the University without extra fees.

Students of the School of Music, not otherwise connected with the University, may be admitted to these classes on the payment of the usual incidental fee charged to students of the College of Letters and Science ($10 per semester). The tuition fee required for students in the University who are not residents of the state is not required in the School of Music.

A statement of courses and classes follows. For a statement of credits, see announcements under Music, p. 167.

COURSES OF THE SCHOOL.

There are two general courses in the School of Music, viz.: (1) The collegiate course, and (2) the academic course.

I. The Collegiate Course.

In this course the requirements for admission are the same as for the general courses in the College of Letters and Science, or for adult special students, together with such proficiency in some department of music, as is stated in connection with the outlined courses of study. A graduate's diploma will be granted on the completion of this course. Three years of study are required, including the courses in musical theory, harmony (one year), and history of music, or their equivalents. It is, however, recom-

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mended that students extend the time to four years to enable them to take a larger proportion of general studies.

II. The Academic Course.

This course is open to persons not members of the University, and also to University students who do not desire to enter the collegiate course pursuant to graduation. Students of this course may, however, be admitted to the musical classes of the University on the payment of the usual incidental fees charged to students of the College of Letters and Science ($10 per semester), but will not be considered candidates for graduation or for a diploma. If, however, at any time, such students should be transferred to the collegiate course, they will, on satisfying other conditions, receive credit for studies previously taken. A certificate of excellence will be granted to worthy students of this course on examination, after not less than three years of study.

OUTLINE OF COURSES OF STUDY.

I. Collegiate Course.

PIANO.

Applicants for admission will be expected to play music of the grade of Haydn's *Sonata* No. 2, or Mozart's *Sonata* No. 1, Cotta edition, and Heller's *Etudes, Op.* 47.

Mason's or Zwintscher's *Technics* throughout the course.

First Year: Kuhner, *Instructive Albums,* II and III. Loew, *Etudes, Op.* 233. Loeschorn, *Op.* 52 and *Op.* 66. Czerny, *Studies in Velocity.* Bach, *Little Preludes and Inventions.*

Second Year: Heller, *Op.* 46 *and* 45. Czerny, *Fingerfertigkeit.* Jensen, *Op.* 32. Cramer-Buelow, *Etudes.* Marmontel, *Mecanisme.* Bach, *Well-Tempered Clavichord.*

Third Year: Tansig, *Studies.* Kullak, *Octave School.* Moscheles, *Op.* 70. Clementi, *Gradus ad Parnassum.* Chopin, *Preludes* and *Etudes.*

Selections of the grade of *Perpetual Motion* by Weber; *Arabeske* by Schumann; *Impromptu, Op.* 29, by Chopin; *Variations, Op.* 54, by Mendelssohn; *Sonata Appassionata* by Beethoven.

It is not supposed that a rigid course can be given which will meet the requirements of individual students, but the foregoing outline represents, in a general way, the character of each year's work. Etudes especially are named, because they indicate grade

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and character of requirements more clearly than can be done otherwise. On the other hand, these studies are supplemented by ample selections from classic and modern authors for use in the parlor or concert room.

Upon graduation students will be expected to play acceptably from memory selections of the grade of Chromatic Fantasies and Fugue by Bach, Sonata op. 90 by Beethoven, Concerto in G minor (one movement) by Mendelssohn, La Fileuse by Raff, and Second Rhapsody by Liszt.

ORGAN.

No previous knowledge of organ playing is required. The student must be well grounded in piano playing, be possessed of a correct technique, and be able to read plain four-part music.

The course of study is continuous, beginning with Stainer's *Organ School* or Whiting's *First Six Months on the Organ*, and following with the larger works of Rink and Best, supplemented by special studies by Thayer, Buck, Ritter, Schneider, Volckmar, and others. Selections from Bach's organ works, Mendelssohn's Sonatas and the compositions of modern composers are used.

Careful training is given in playing church music and voluntaries, the use of stops, and the mechanism of the instrument.

VOICE.

The student must be able to read plain music and must have had an amount of training equal to the first half of Concone's *Fifty Lessons*, and comprising the usual technical study for the same period.

First Year: Tone Placing, Breathing, and Phrasing; Ballad Singing and the Sostenuto style. Technical and other studies of the grade of Bonaldi's *Six Vocalises*, Concone's *Fifteen Vocalises*, Marchesi's *Exercises, Op.* 21, Book I., etc. Easy forms of Italian and German songs.

Second Year: Studies of the grade of Schubert's *Manual of Vocal Technique*, Schubert's *Special Studies*, Marchesi's *Vocalises, Op.* 21, Book II. Bordogni's *Bravura Studies*, more difficult German and French songs, and easy oratorio and operatic arias, recitative and the more difficult oratorio and operatic arias.

Third Year Study of cadenzas and larger forms of execution.

On graduation the student will be expected to sing acceptably selections (according to voice and school) from such songs and arias as: "He Was Despised," "Angels Ever Bright and Fair," "I Know That My Redeemer Liveth," and "Thou Shalt Break

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Them," by Handel; 'With Verdure Clad," "Rolling in Foaming Billows," and "In Native Worth," by Haydn; "If With All Your Hearts," "It is Enough," and "O Rest in the Lord," by Mendelssohn; "Ah Non Giunge," by Bellini; "Infelice," by Verdi; "Roberto, tu che Adoro," by Meyerbeer; "Vedrai Carino," by Mozart; "Una Voce," and "Pro Peccatis," by Rossini.

VIOLIN.

First Year. Hermann, *Scale Studies.* Kayser, *Violin Instructor, I and II.* Herbert Ries, *Violin School, Part I.* Easy melodious solos.

Second Year. Kayser, *Violin Instructor, III.* Kayser, *Etudes, Op.* 29. Schubert, *Violin School, IV.* Herbert Ries, *Violin School, Part III.* Solos by *Viotti, Rode, De Beriot.*

Third Year. Schradieck, *Violin Technic.* De Beriot, *School Part II. Etudes* by Dont, Kreutzer, and Schubert.

Solos by De Beriot, Leonard, Vieuxtemps, and Wieniawski.

Theoretical Studies.

MUSICAL THEORY AND CHORAL PRACTICE.

A one year course, twice a week, in the general theory of music, including notation, scale construction, intervals, distinctions of rhythm, etc., combined with a practical study of sight reading and choral singing.

This course is especially recommended to all students, whether of instrumental or vocal music, as furnishing a substantial foundation for all other work; it will also be found useful for those who contemplate teaching in public, or similar schools.

HARMONY AND COUNTERPOINT.

The student must be able to read and play simple four-part music.

First year: Review of scales, and intervals, triads, seventh chords, augmented sixth chords, modulation, synopsis of suspension and appoggiatura.

Second year: Detailed treatment of modulation, suspension, appoggiatura, etc. Harmonizing melodies. Simple strict counterpoint.

Third Year: Double counterpoint, canon and fugue.

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HISTORY OF MUSIC.

A course of lectures twice a week, extending through the year. In the first semester the lectures give a general survey of music before the Christian era, and down to the eighteenth century.

The second semester is devoted to the eighteenth and nineteenth centuries.

MUSICAL COMPOSITION.*

A year course, twice a week. One year of harmony is required as preparation.

II. Academic Course.

There are no requirements for entrance. Students are received and graded according to ability and amount of previous study. This course in all departments leads up to and overlaps the collegiate course. Students after reaching the proper stage of preparation may be transferred to the collegiate course, or may remain in the academic course, the work of the last three years being identical in both courses. But no certificate of excellence will be issued to any student who is not thoroughly fitted to enter the second year of the collegiate course.

GUITAR, BANJO, AND MANDOLIN.

In response to the demand growing out of the popularity of these attractive instruments, the School of Music provides ample and excellent opportunities for their study. Special attention is given to expression, technique, and proper fingering. In general, correct methods leading to the highest efficiency are employed.

Text-books for Guitar: Carcassi, Sor, Ferranti, Holland, and Langley.

Text-books for Banjo: Dobson, Stewart, Henning, and others.

Text-books for Mandolin: School of Wessenberg, and Progressive Studies by Guiseppi, Branzoli, supplemented by solo selections.

ORCHESTRA.

Should a sufficient number of students present themselves for this purpose at the beginning of the year, an orchestra will be organized and a rehearsal will be held each week. It is open to

*The courses in counterpoint, etc., and in musical composition are inserted here under their proper headings, because they are frequently taken as electives, but they represent graduate work for the students of the School of Music.

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all students who have sufficient knowledge of any orchestral instrument to pursue the work profitably. Those who take the rehearsals regularly are entitled to a one-fifth credit.

BAND.

A military band has been organized, open to all students. Two rehearsals are held each week. Freshmen and sophomores belonging to the band are exempt from military drill.

CHORAL UNION.

The choral union is an organization of students of the University and citizens of Madison for the purpose of studying the oratorios and larger choral work of ancient and modern authors, interspersed with lighter part-songs and glees, and of adequately presenting the same in public performance. Very successful performances of Handel's *Messiah* and *Judas Maccabaeus*, Haydn's *Creation*, and Mendelssohn's *Elijah* and *St. Paul* have been given, and other works of similar magnitude will follow.

Applicants for membership are expected to be able to read plain music at sight. The rehearsals are held weekly from October until May. The annual membership fee is one dollar.

RECITALS AND CONCERTS.

Student recitals, free to all students, and open to all others by invitation, are held at intervals during the collegiate year. Recitals and concerts by eminent artists are given from time to time at a low price to students of the school of Music.

TUITION.

The school year is divided into two semesters of eighteen weeks each, but the tuition for musical instruction may be paid by the half-semester.

Half-Semester of Nine Weeks.
Two Lessons a Week.

PIANO.

	½-hour lessons.	¾-hour. lessons.	Hour lessons.
*Miss Bird	$18.00	$25.00	$30.00
Miss Regan	18.00	25.00	30.00
Miss McMurphy or Mrs. Curtis	13.50	20.00	25.00
Miss Fowler	12.00	16.00	20.00

*Former pupils of Miss Bird will be received at the same rate as heretofore.

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VOICE.

Miss Foresman	$18.00	$25.00	
Miss Smith, or Mr. Bredin	13.50	20.00	

ORGAN.

Professor Parker, or Mr. Bredin	$13.50	$20.00	$27.00

VIOLIN, GUITAR, BANJO, HARP.

Mr. Nitschke, Mrs. Brand, Mrs. Anderson	$ 9.00	$13.50	$18.00

MANDOLIN.

Mr. Bach	$ 6.00	$ 9.00	$12.00

One Lesson a Week.

PIANO.

	½-hour lessons.	¾-hour lessons.	Hour. lessons.
Miss Bird	$10.00	$13.50	$17.00
Miss Regan	10.00	13.50	17.00
Miss McMurphy or Mrs. Curtis	7.50	11.00	13.50
Miss Fowler	7.00	10.00	12.00

VOICE.

Miss Foresman	$10.00	$13.50	
Mr. Bredin, or Miss Smith	7.50	11.00	

ORGAN.

Professor Parker or Mr. Bredin	$7.50	$11.00	$13.50

VIOLIN, GUITAR, BANJO, HARP.

Mr. Nitschke, Mrs. Brand, Mrs. Anderson	$ 4.50	$ 6.75	$ 9.00

MANDOLIN.

Mr. Bach	$ 3.60	$ 5.40	$ 6.75

Diploma Fee, $5.00.

No engagement for less than nine lessons will be made.

Theoretical studies are taken in the University classes, and those who are not otherwise connected with the University are expected to pay the incidental fee of the College of Letters and Science which is $10.00 a semester. The fee, however, is not required

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of those taking only individual lessons in singing, or on some instrument.

Students are not received for less than half a semester except by permission of the Director of the School of Music. Students are expected to pay the tuition fees by the half semester or semester in advance.

No student is entitled to lessons until tuition has been paid and a receipt secured from the Secretary of the Regents.

No deduction can be made for absence from lessons, except for long continued illness, in which case the School of Music will share the loss equally with the student.

No student is expected to take part in any public entertainment without the consent of his teacher and the Director.

Students who, by reason of deficient musical ability, neglect of study, or any other valid reason, fail to make satisfactory progress, may be dropped from the classes.

The pianos in Music Hall may be used for practice for a limited number of hours daily by students of the University on payment of a fee of from four dollars to ten dollars per semester. Pianos may be rented from dealers at from three to six dollars a month.

The office of the Director in Music Hall at the University will be open for several days before the opening of each semester for the reception of pupils and assignment of lessons. After the opening of the University the Director may be found daily at Music Hall, from 10 to 11, or at the office in the Kroncke building from 9 to 10.

For further information, address

F. A. PARKER, Director, 14 W. Gilman St., or

MISS BESSIE BRAND, Secretary School of Music,

Madison, Wis.

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WASHBURN OBSERVATORY.

STAFF.

CHARLES R. VAN HISE, Ph. D., LL. D., President of the University.
G. C. COMSTOCK, Ph. B., LL. B., Director, and Professor of Astronomy.
A. S. FINT, M. A., Assistant Astronomer.
A. G. WORTHING, Computer.
EMMA MAYNARD.
WILLIBALD WENIGER, Student Clerk.
A. H. BARTELT, Student Assistant, Time Service.
EDWARD J. FILBEY, Student Assistant, Meteorology.
THOS. BERTO, Student Assistant, Meteorology.

The Washburn Observatory was established in the year 1878 through the munificence of the late Gov. C. C. Washburn. Although its obligations and opportunities as a branch of a teaching university have not been ignored, the energies of its staff from the beginning have been directed mainly to astronomical research. Among the lines of research that have been cultivated may be specified the measurement of the positions and motions of the heavenly bodies, the discovery and measurement of double stars, the investigation of variable stars, the study of changes of latitude and of the amount and character of the atmospheric refraction, the determination of the amount of the aberration of light, problems of stellar color, proper motions of faint stars, and a systematic investigation of the parallaxes of all accessible stars which have large proper motions. The observatory also maintains a tridaily meteorological service.

The principal instruments of the observatory are:

An equatorially-mounted telescope of 15½ inches aperture, constructed by Alvan Clark & Sons, and provided with graduated circles, driving clock, a filar micrometer, double image micrometer by Steinheil, a spectroscope, astro-photometer, and a very complete set of eye-pieces; a meridian circle, by A. Repsold & Sons, of Hamburg, with collimators, transit micrometer, and the usual accessories of such an instrument. The objective of the instrument

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was made by the Clarks, and has an aperture of 4.8 inches and a focal length of 58 inches. The circle is graduated to 2 minutes of arc. For several years this instrument has been employed for an extensive series of determinations of stellar parallax. There are also a sidereal clock by Hohwü, of Amsterdam, two mean time clocks by Howard, of Boston, all excellent time-pieces, and a chronograph, by Fauth & Co., of Washington.

In the Student's Observatory are mounted a six-inch equatorial telescope, by Alvan Clark & Sons, and a transit instrument of the broken telescope type, by Bamberg. These instruments, while primarily intended for instruction, are well adapted to and are employed for certain classes of original work. In particular, the equatorial telescope has been provided with reflecting prisms (Loewy), and employed as one of the principal instruments of the observatory in an investigation of the refraction and the constant of aberration, and the Bamberg instrument is used for latitude determinations by the Talcott method and for the time service of the observatory. The observatory also possesses a considerable number of subsidary instruments, such as portable telescopes, spectroscopes, photometers, chronometers, sextants, an engineer's transit, an altazimuth, a universal instrument of the German type, a personal equation machine, a spherometer caliper, seismoscopes, photographic apparatus, and a complete set of meteorological instruments.

The Woodman Astronomical Library, established in connection with the observatory, and supported from the income of a fund given by the late Cyrus Woodman, Esq., possesses a large and valuable collection of works upon astronomy and kindred subjects.

By provision of law the results of important investigations conducted at the Washburn Observatory are published by the State, and under this provision eleven volumes, representing the more important work done at the observatory, have been issued.

Students of sufficient technical attainments are admitted to the observatory and take part in the investigations in progress. Meritorious original work of such students may be included in the Publications of the Observatory, or in the Bulletins of the University. The courses of instruction in astronomy are stated upon page 145.

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UNIVERSITY EXTENSION.

STAFF.

CHARLES R. VAN HISE, Ph. D., LL. D., President of the University.

J. W. STEARNS,* LL. D., Director and Professor of Philosophy and Pedagogy.

A. W. TRESSLER, A. B., Secretary, and Inspector of Schools.

T. S. ADAMS, Ph. D., Assistant Professor of Economics and Statistics.

VICTOR COFFIN, Ph. D., Assistant Professor of European History.

G. C. COMSTOCK, Ph. B., LL. B., Professor of Astronomy.

M. L. DAGGY, Ph. B., Instructor in Rhetoric and Oratory.

J. C. ELSOM, M. D., Professor of Physical Training and Director of the Gymnasium.

J. C. FREEMAN, LL. D., Professor of English Literature.

W. F. GIESE, A. M., Assistant Professor of Romance Languages.

C. H. HANDSCHIN, Ph. D., Instructor in German.

A. R. HOHLFELD, Ph. D., Professor of German.

TOYOKICHI IYENAGA, Ph. D., Special Extension Lecturer in Political Science.

LOUIS KAHLENBERG, Ph. D., Professor of Physical Chemistry.

F. W. MEISNEST, B. S., Instructor in German.

B. H. MEYER, Ph. D., Professor of Institutes of Commerce.

J. C. MONAGHAN, A. B., Professor of Theory and Practice of Domestic and Foreign Commerce.

J. E. OLSON, B. L., Professor of the Scandinavian Languages and Literature.

M. V. O'SHEA, B. L., Professor of the Science and Art of Education.

J. F. A. PYRE, Ph. D., Assistant Professor of English Literature.

P. S. REINSCH, Ph. D., Professor of Political Science.

H. L. RUSSELL, Ph. D., Professor of Bacteriology, and Bacteriologist to the Experiment Station.

F. C. SHARP, Ph. D., Assistant Professor of Philosophy.

GRANT SHOWERMAN, Ph. D., Assistant Professor of Latin.

C. F. SMITH, Ph. D., Professor of Greek and Classical Philology.

S. E. SPARLING, Ph. D., Assistant Professor of Political Science.

*Resigned, January 1st, 1904.

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Lectures.

University extension is a term for instruction offered at a distance from the University, by means of lectures delivered in person by University instructors, on subjects which they treat in their regular classes.

Under the system adopted by the University, the regular University extension lectures are delivered in courses of six. Single lectures are also delivered by the regular staff and by a number of professors and instructors. This arrangement is a modification of our regular extension courses, and may be available under conditions where regular extension courses cannot be established.

A printed syllabus, free to each student, will give an epitome of the subject considered, an analysis of each lecture, references to the best books on the subject, and other helpful suggestions.

The class, which is held before or after each lecture, furnishes the student an opportunity to question the lecturer and to have special difficulties explained. In the class, the lecturer will take the opportunity to elaborate his subject or to emphasize its salient features.

The lecturer will hold at the end of the course a written examination which may be taken only by those who have attended the lectures and classes, read the required books, and sent in the required papers. To such as comply with these requirements and pass the examination, the University will award a certificate having a recognized value on the University records and credited accordingly, should the holder ever study at the University.

Expenses.

The expenses of a course consist of local expenses and the charges of the University. Under the former head are included hall rent, printing, advertising, etc., which are managed by the local center, and which vary, of course, in different towns and circumstances. Often a church or school hall may be obtained for the lecturers without expense.

The charges of the University consist of:—

1. A fee of $100 for a course of six lectures.

2. The lecturer's traveling expenses, including sleeping-car and meals, when necessary. In the case of a circuit, the lecturer's traveling expenses are divided equally among the centers forming the circuit.

3. The lecturer's hotel bill. Where the lecturer is entertained by members of the local center, this item disappears.

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4. If lantern illustrations are given, the actual cost will be paid by the local center.

LECTURE COURSES OF 1903-1904.

Professor M. V. O'SHEA. Applied Psychology and Child-Study; Lessons from the Masters.

Assistant Professor F. C. SHARP. Problems of Moral Progress.

Assistant Professor T. S. ADAMS. Porto Rico under Spanish and American Government; Labor Problems; Problems in Taxation.

Professor B. H. MEYER. Economic Problems.

Professor J. C. MONAGHAN. Industrial and Commercial Developments; The Industrial and Commercial Development of Germany.

Dr. TOYOKICHI IYENAGA. The Far East; China; Japan.

Assistant Professor S. E. SPARLING. The Modern City and Its Problems; American Political Parties and their Relation to Government.

Assistant Professor VICTOR COFFIN. The Transition from the Old Régime to the Nineteenth Century; The Political Development of the Chief European States in the Nineteenth Century.

Professor P. S. REINSCH. The Constitution and the Founding of the Federal Government; The Statesmen of the Civil War; Contemporary World Politics; Historical Towns and Sites of Italy.

Mr. M. L. DAGGY. The Orator in American History.

Professor J. C. FREEMAN. English Life and Literature; Shakespear; The Great Epics of the World; American Life and Letters.

Assistant Professor J. F. A. PYRE. American Writers and American Culture; Typical English Poems; Art and Life.

Assistant Professor GIESE. The French Classic Poets; The Skeptical Movement in French Literature from the Renaissance to the Nineteenth Century.

Professor A. R. HOHLFELD. Epochs of German Literature; Goethe: The Man and the Poet.

Mr. F. W. MEISNEST. Schiller.

Dr. C. H. HANDSCHIN. The Development of the German Novel.

Professor C. F. SMITH. Greek Life; Greek Literature.

Assistant Professor SHOWERMAN. Greek Art; Historic Sites of Greece; Historic Sites of Italy; The Remains of Ancient Rome; Roman Life.

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Professor J. E. Olson. Early Scandinavian History and Literature.

Professor G. C. Comstock. Astronomy.

Professor H. L. Russell. Microbes and their Work.

Professor Louis Kahlenberg. Chemistry.

Professor J. C. Elsom. Physical Training.

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PHYSICAL TRAINING.

DR. ELSOM, MISS MAYHEW, MR. O'DEA, AND MR. ANGELL.

The Gymnasium is one of the largest and best equipped buildings of the kind in the country. Its size is 200 feet in length by 100 feet in width. On the ground floor are found the offices of the Director and of the Commandant; a large lecture and gun room; the locker room, containing 900 lockers; the bathrooms, with shower, tub, and spray baths; and a large natatorium, 20 by 80 feet. On the second floor, in addition to the necessary offices, there is an unobstructed hall, 165 by 98 feet, used for gymnastic exercise and military drill. A complete equipment of the usual developing machines, and gymnastic apparatus of all kinds is supplied. The third floor contains a large baseball cage, six handball courts, two running tracks, and two rifle ranges.

Each student, on entering the department, undergoes a thorough physical examination, in order that his physical condition may be known to the director, and suitable exercise prescribed. Various strength tests and measurements are given; the heart, lungs, and eyes are examined, and the utmost caution used in the advice given regarding individual exercise. One examination during each semester is required, the latter demonstrating any improvement or change in the student's physical condition. Anthropometric cards and charts are platted for students when desired.

Systematic class work in gymnastics is required on two days of the week, of all freshmen and sophomores. This work consists of vigorous drill with dumb-bells, clubs, bar-bells, etc., besides progressive graded work on the various pieces of gymnastic apparatus, and gymnastic games, always under the careful direction of competent instructors.

In the scheme of gymnastics, such exercises as are promotive of health, grace, and self-control are sought for rather than heavy and dangerous athletic performances.

Every facility is provided for track athletics, baseball, football, tennis, aquatics, etc. The University owns the large tract known as Camp Randall, which is fitted up with two large grandstands, a one-fourth and a one-third mile track, and other necessary features.

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During the second semester lectures on the physiology of exercise, personal hygiene, health culture, etc., are given to the freshmen. These lectures are illustrated by various charts, lantern slides, etc., and take the place of the regular gymnasium classes on the days when the lectures are given.

The University is situated on the shores of Lake Mendota, a beautiful sheet of water, which invites to exercise and recreation in boating. The University Boat House Association has erected near the Gymnasium a boat house at a cost of over $4,000.

Gymnastics for Women.

Chadbourne Hall contains a finely equipped gymnasium for the use of the young women attending the University. The room is two stories high, has a floor space of 71 by 40 feet, and is provided with twenty-seven dressing rooms and 128 lockers. The dressing rooms connect with shower baths, supplied with hot and cold water, furnishing ample bathing facilities for those who take gymnastics.

The gymnasium suit requires four yards of double-width (54 in.) dark blue serge, and consists of two pieces, a loose shirtwaist and bloomers. The waist has a sailor collar trimmed with narrow white braid. The Butterick pattern may be used. The suit can be obtained here for $5.00.

The apparatus is complete and varied, consisting of chest weights, dumb-bells, wands, bar-bells, etc., besides a complete outfit of Swedish apparatus and other forms of appliance for development and physical improvement. Music is used in all class drills.

The main objects of the training for women are the acquiring and maintaining of good health and the producing of a good physical foundation for mental activity. Other results are poise, control, grace, and development.

Each student will undergo a careful physical examination on entering the department, in order that the physical condition may be known, and suitable exercise prescribed for individual cases. A second examination is given during the second semester, in order that the improvements and benefits of the course of exercise may be shown.

The work is required of all freshman and sophomore students. The freshmen are required to meet in the gymnasium on the first Thursday of the college year at 4 o'clock. Sophomores will meet on the same day at 5 o'clock.

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The Women's Athletic Association is maintained to further all out-door sports; tennis, rowing, field hockey, basbetball, cross country walking, etc.

Course in Teachers' Gymnastics.

A class in theory of physical training and in practice of teaching gymnastics meets once a week during the second semester. The credit given is one-fifth for the semester.

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MILITARY SCIENCE AND TACTICS.

CAPTAIN CURTIS, U. S. A.

This department of the University is maintained in accordance with state and federal laws. By the regulations of the University, all the able-bodied male students of the freshman and sophomore classes are required to take military drill.

The work of the department embraces a course in drill regulations, a course of lectures on military subjects, and practical instruction in the school of the soldier, company, and battalion, target practice, artillery drill, and signal drill. The class in drill regulations is organized each year, and may be elected by both classes. All commissioned officers, the sergeant-majors, quartermaster-sergeants, and first sergeants are required to take this course, which continues through the winter. The credit of drill regulations and the lecture course is that of a two-fifths study.

Freshmen who, prior to their entering the University, have received the equivalent of one year's instruction in the University battalion, may, at the discretion of the Commandant, be required to drill one year only; *provided*, that they furnish certificates from the principals of military schools they have attended, or the commanding officers of military companies in which they have served for a year or more as regularly enlisted men or officers, setting forth in detail the military duty performed; and that they take the full course in drill regulations, maintaining a good class standing; except that the Commandant may exercise the further discretion of deferring the required drill of all cadets of such military schools or members of companies to the second or sophomore year. Freshmen or sophomores who, prior to their connection with the University, have served in the army or navy of the United States and been honorably discharged, may receive full credit for drill at the University without further military instruction.

No student is entitled to excuse from drill on the ground of employment unless such employment is necessary for his support. It is not the intention of the University to force students to drill when such action would practically compel the student to leave the University. On the other hand, we can not permit students to engage in other occupations which are not necessary for their sup-

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port and excuse them from drill on the ground that such employment occupies the drill hour. In such a case as that, drill should be regarded in the same way as any other study.

Drills will begin at the opening of the first semester and be held twice a week throughout the year.

Students of the freshman or sophomore classes, who enter, as candidates, the crews and athletic teams recognized by the athletic council, may be excused from drill when they are regularly elected to membership in such organizations.

When a member of a crew or an athletic team shall be discharged from such crew or team he will report to the Commandant for drill at the next drill succeeding his discharge.

All appointments to office in the companies shall originate in the sophomore class, but officers may be promoted and continued in office during their junior and senior years.

Students excused from drill will be required to take, before graduation, an additional one-fifth study in the academic course for each semester in which they were excused from drill.

The uniform of the regiment is similar to the fatigue or undress uniform of the United States army, and can be obtained in Madison at a cost of $9.50 to $15.00.

Organization.

The organization is that of a regiment of infantry, consisting of two battalions of three or more companies each, a platoon of artillery, a brass band, a trumpet corps, and signal and target detachments. These organizations will be supplied with a full quota of officers. Students will enter the infantry regiment and afterward be specially assigned to the other organizations at the discretion of the Commandant.

Upon graduation specially qualified students receive from the Governor of Wisconsin state commissions of honorary second lieutenants.

ROSTER OF THE UNIVERSITY CORPS OF CADETS FOR 1903-04.

Commandant.

Captain Charles A. Curtis, U. S. Army, Colonel Wisconsin National Guard.

Cadet Officers.

REGIMENTAL FIELD AND STAFF.

Colonel Hamlet J. Barry.

Lieutenant-Colonel Ora B. Cahoon.

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Major Fred V. Heinemann, Adjutant.
Major Walter C. Reineking, Inspector.
Captain Henry A. Cook, Quartermaster.
First Lieutenant Walter S. Lacher, Aide-de-Camp.
Sergeant-Major Ralph W. Collie.
First Sergeant James A. Stewart, Drum-Major.
First Sergeant Paul H. Kremer, Chief Trumpeter.

FIRST BATTALION.

Major Edgar A. Goetz.
Captain Cullen D. Purple, Quartermaster.
First Lieutenant George W. Nelson, Adjutant.
Sergeant-Major Ira J. Wilson.

SECOND BATTALION.

Major Fred N. Carrico.
First Lieutenant John C. Vroman, Quartermaster.
Second Lieutenant Perry C. Stroud, Adjutant.
Sergeant-Major Albert L. Lindemann.

COMPANY OFFICERS.

Company A.
Captain Charles A. Taylor.
1st. Lieut. Lancaster D. Burling.
2d Lieut. Carl E. Thorkelson.
1st. Sergt. Romano B. Kuehns.

Company B.
Captain Henry Z. Mitchell.
1st Lieut. Henry C. Duke.
2d Lieut. Harry F. Parker.
1st Sergt. Thomas Conway.

Company C.
Captain Harold K. Weld.
1st Lieut. Walter S. Lacher.
2d Lieut. George S. Ray.
1st Sergt. Carl Richards.

Company D.
Captain Victor R. Griggs.
1st Lieut. Edward T. Carey.
2d Lieut. Marcus F. Hoefs.
1st Sergt. Louis M. Anderson.

Company E.
Captain Leo M. Cook.
1st Lieut. Richard A. Schmidt.
2d Lieut. Stanley R. Latshaw.
1st Sergt. Evariste M. Lewis.

Company F.
Captain Albert W. Foster.
1st Lieut. Elmer G. Hoefer.
2d Lieut. Hugo S. Wells.
1st Sergt. John A. R. Daniels.

SIGNAL CORPS.

Captain Richard Q. Roemer.
2d Lieut. Howard C. Hopson.
1st Sergt. Elmer T. Howson.

TARGET DETACHMENT.

Captain Major E. Wharry.
1st Lieut. John N. Hande,
1st Sergt. William F. Hood.

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SUMMER SESSION AND SUMMER SCHOOLS.

OFFICERS OF INSTRUCTION.

CHARLES R. VAN HISE, Ph. D., LL. D., President of the University.

J. B. PARKINSON, A. M., Vice President; Professor of Constitutional and International Law.

D. C. MUNRO, A. M., Director of the Summer Session. Professor of European History.

VICTOR COFFIN, Ph. D., Assistant Professor of European History.

J. R. COMMONS, Ph. D., Professor of Political Economy.

W. W. DANIELLS, M. S., Sc. D., Professor of Chemistry.

L. W. DOWLING, Ph. D., Assistant Professor of Mathematics.

J. C. ELSOM, M. D., Professor of Physical Culture and Director of Gymnasium.

A. B. FAUST, Ph. D., Assistant Professor of German.

G. C. FISKE, Ph. D., Assistant Professor of Latin.

W. D. FROST, M. S., Assistant Professor of Bacteriology.

G. P. GARRISON, Ph. D., Professor of History in the University of Texas.

W. F. GIESE, A. M., Assistant Professor of Romance Languages.

R. A. HARPER, Ph. D., Professor of Botany.

W. H. HOBBS, Ph. D., Professor of Mineralogy and Petrology.

H. R. HOLMES, Ph. B., Assistant Professor of Physical Education, and Director of Physical Culture for Men in the University of Utah.

L. KAHLENBERG, Ph. D., Professor of Physical Chemistry.

H. B. LATHROP, A. B., Associate Professor of English Literature.

W. S. MARSHALL, Ph. D., Assistant Professor of Zoology.

ABBY S. MAYHEW, Assistant Professor of Physical Culture.

B. H. MEYER, Ph. D., Professor of Institutes of Commerce.

W. S. MILLER, M. D., Assistant Professor of Anatomy.

M. V. O'SHEA, B. L., Professor of the Science and Art of Education.

J. F. A. PYRE, Ph. D., Assistant Professor of English Literature.

G. SHOWERMAN, Ph. D., Assistant Professor of Latin.

C. S. SLICHTER, M. S., Professor of Applied Mathematics.

C. F. SMITH, Ph. D., Professor of Greek and Classical Philology.

B. W. SNOW, Ph. D., Professor of Physics.

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S. E. SPARLING, Ph. D., Assistant Professor of Political Science.
A. W. TRESSLER, A. B., Inspector of Schools.
A. TROWBRIDGE, Ph. D., Professor of Mathematical Physics.
E. K. J. H. Voss, Ph. D., Professor of German Philology.

Instructors and Assistants.

B. M. ALLEN, Ph. D., Instructor in Comparative Anatomy.
C. E. ALLEN, B. S., Instructor in Botany.
F. E. ALLEN, M. L., Instructor in Mathematics.
A. R. ANDERSON, Ph. D., Assistant in Greek.
S. H. BALL, A. B., Assistant in Geology.
W. G. BLEYER, M. L., Instructor in English.
B. H. BODE, Ph. D., Instructor in Philosophy.
M. B. EVANS, Ph. D., Instructor in German.
M. G. FRAMPTON, M. A., Instructor in English.
E. B. HUTCHINS, JR., M. S., Assistant in Analytical Chemistry.
M. O. LORENZ, A. B., Instructor in Economics.
F. W. MEISNEST, B. S., Instructor in German.
L. F. MILLER, M. A., Instructor in Physics.
O. PATZER, M. L., Instructor in French.
H. SCHLUNDT, Ph. D., Instructor in Physical Chemistry in the University of Missouri.
G. C. SELLERY, Ph. D., Instructor in European History.
A. H. TAYLOR, B. S., Instructor in Physics.

GENERAL INFORMATION.

The University of Wisconsin will hold in 1904 its sixth Summer Session. This session will continue for six weeks, beginning Monday, June 27, and closing Friday, August 5. While the Summer Session of the University includes the Summer School for Teachers, which has been in operation for some years, it is not an enlargement of that school, but has a different purpose. This additional term of the University will provide elementary, advanced, and graduate instruction throughout the range of subjects ordinarily covered by the Faculty of Letters and Science.

The Summer Session of the University will meet the wants of teachers and special undergraduates who desire to broaden and deepen their knowledge; of regular undergraduates who desire to shorten their University course; and of graduates who wish to devote a part of their vacation work to advanced courses. Students may enter the University in the Summer Session instead of waiting until the fall semester. This is necessary in the case of students

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who plan to complete the college course in three years. It is advisable for those who are weak in language or other preparation. In general, it is advantageous for a new student to take one or two courses in the Summer Session. He thus becomes familiar with University methods of instruction; he receives more personal attention, as the classes in summer are smaller; his experience and the advice of his instructor enable him to shape his later course of study more wisely. An important feature of the announcement of many of the departments of the Summer Session is the provision for special, advanced, or research work adapted to individual students. Thus students who wish to carry on their investigations with more adequate library or laboratory facilities than their present situation affords will find here individual guidance and the ample equipment necessary to their research.

The expenses will be the same, whether the work is done in the Summer Session of the University, in the Summer School, or partly in each.

Terms of Admission.

The requirements for admission are the same for the Summer Session as for the other sessions of the University. (See page 52.) Teachers are permitted to enter, without examination, such courses of study in the Summer Session as they are prepared to take to advantage.

Students from high schools will be admitted to the elementary courses of the Summer School without special examination. They may also be admitted to University courses for which they are qualified, but University credit will be given only to students who have satisfied the regular entrance requirements of the University.

Fees.

The fees for the Summer Session of the University and the Summer School are the same. A general fee of $15 will be charged.

Laboratory fees will be charged in the various scientific laboratories at rates proportional to those for the regular sessions of the University. The laboratory deposit for any course in chemistry will be $10, with a refund proportional to the amount of breakage and material used. In botany and zoology a fee will be charged of $1.25 for each unit hour of work performed; that is, for each thirty-two hours of time spent in the laboratory. In the physical laboratory the fee will be $2 for each unit hour. A fee of $2.50 will be charged for the course in vertebrate anatomy, and $5 for the course in histology.

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Excursions.

Excursions on Saturday are arranged so that students may have an opportunity of visiting interesting and picturesque localities near Madison. These excursions offer opportunities for field work in various subjects, as well as pleasant outings. Full details of all excursions will be announced each week.

DEPARTMENTS OF STUDY.

Note.—A more detailed statement of the courses here given may be found in the special announcement of the Summer Session, which may be had upon application to the Registrar of the University.

Psychology, Philosophy, and Education.

PROFESSOR O'SHEA, ASSISTANT PROFESSOR TRESSLER, AND DR. BODE.

1. Principles of Education. *M., Tu., W., Th., F., at* 11. Two-fifths credit. Professor O'SHEA.
2. History of Education. *M., Tu., W., Th., F., at* 8. Two-fifths credit. Assistant Professor TRESSLER.
3. Mental Development. *M., Tu., W., Th., F., at* 10. Two-fifths credit. Professor O'SHEA.
4. School Supervision. *M., Tu., W., Th., F., at* 9. Two-fifths credit. Assistant Professor TRESSLER.
5. Elementary Psychology. Particular attention to the topics required in the state examination for teachers' certificates. *M., Tu., W., Th., F., at* 11. Two-fifths credit. Dr. BODE.
6. The Philosophy of the Nineteenth Century English Writers. *M., Tu., W., Th., F., at* 12. Two-fifths credit. Dr. BODE.
7. Contemporary Metaphysics. *M., W., F.* One-fifth credit. Dr. BODE.

History.

PROFESSOR GARRISON, PROFESSOR MUNRO, ASSISTANT PROFESSOR COFFIN, AND DR. SELLERY.

1. Early Medieval History, from 395 to 800. *M., Tu., Th., F., at* 9. Two-fifths credit. Professor MUNRO.
2. Modern European History, 1500 to 1900. *M., Tu., W., Th., F., at* 12. Two-fifths credit. Assistant Professor COFFIN.
3. English History, 1485 to 1900. *M., Tu., W., Th., F., at* 8. Two-fifths credit. Dr. SELLERY.
4. American History, from 1781 to 1830. *M., Tu., W., Th., F., at* 10. Professor GARRISON.

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5. Age of Louis XIV. *M., Tu., W., Th., F., at* 9. Two-fifths credit. Dr. SELLERY.
6. Nineteenth Century History, 1815 to 1900. *M., W., F., at* 11. One-fifth credit. Assistant Professor COFFIN.
7. Southwestward Expansion, 1799 to 1848. *M., W., F., at* 11. One-fifth credit. Professor GARRISON.
8. Seminary in Medieval History. The Latin Kingdom of Jerusalem. Open to graduates only. *W.*, 10 *to* 12. One-fifth credit. Professor MUNRO.
9. Seminary in Nineteenth Century History. German revolutionary period, 1848 to 1849. Open to graduates only. One fifth credit. Assistant Professor COFFIN.
10. Seminary in American History. A critical study of the Texas revolution. Open to graduates only. One-fifth credit. Professor GARRISON.
11. The Teaching of History. *Th., at* 11. Professor MUNRO.
12. Historical Conference. *Tu., at* 11.

Economics and Commerce.

PROFESSOR MEYER, PROFESSOR COMMONS, AND MR. LORENZ.

1. Labor Problems in the United States. *M., Tu., W., Th., F., at* 9. Two-fifths credit. Professor COMMONS.
2. Current Problems in Taxation. *M., Tu., W., Th., F., at* 11. Two-fifths credit. Professor COMMONS.
3. Transportation. *M., Tu., W., Th., F., at* 10. Two-fifths credit. Professor MEYER.
4. Corporation Finance. *M., Tu., W., Th., F., at* 8. Two-fifths credit. Professor MEYER.
5. Elements of Economics. *M., Tu., W., Th., F., at* 8. Two-fifths credit. Mr. LORENZ.
6. Modern Socialism. *M., W., F., at* 9. One-fifth credit. Mr. LORENZ.
7. Seminary. Current economic problems. For graduates. Professors COMMONS and MEYER, and Mr. LORENZ.

Political Science.

PROFESSOR PARKINSON AND ASSISTANT PROFESSOR SPARLING.

1. Constitutional Law. *Tu., Th., at* 10. One-fifth credit. Professor PARKINSON.
2. Constitutional Law. *M., Tu., W., Th., F., at* 9. Two-fifths credit. Professor PARKINSON.

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3. International Law. *M., W., F., at* 10. One-fifth credit. Professor PARKINSON.
4. Elements of Political Science. *M., Tu., Th., F., at* 8. Two-fifths credit. Assistant Professor SPARLING.
5. Municipal Government in the United States and Europe. *M., Tu., Th., F., at* 9. Two-fifths credit. Assistant Professor SPARLING.

Greek.

PROFESSOR SMITH AND DR. ANDERSON.

1. Elementary Greek. *M., Tu., W., Th., F., at* 10. Two-fifths credit. Dr. ANDERSON.
2. Homer's *Odyssey. M., Tu., W., Th., F., at* 9. Two-fifths credit. Dr. ANDERSON.
3. Plato's *Apology*, or two plays of Euripides. *M., Tu., W., Th., F., at* 10. Two-fifths credit. Professor SMITH.
4. One play of Aeschylus or Sophocles, and one play of Euripides, or two plays of Aristophanes. *M., Tu., W., Th., F., at* 11. Two-fifths credit. Professor SMITH.
5. Greek Seminary. The Agamemnon of Aeschylus. *W.*, 8 *to* 10. Professor SMITH.

Latin.

ASSISTANT PROFESSORS SHOWERMAN AND FISKE.

1. Ancient Rome. *Tu., Th., at* 10. One-fifth credit. Assistant Professor SHOWERMAN.
2. The Roman Drama. *M., W., F., at* 10. One-fifth credit. Assistant Professor SHOWERMAN.
3. Teacher's Course. Cicero. *M., Tu., W., Th., F., at* 11. Two-fifths credit. Assistant Professor SHOWERMAN.
4. The Annals of Tacticus, Books I.-VI. *M., Tu., W., Th., F., at* 9. Two-fifths credit. Assistant Professor FISKE.
5. Latin Syntax and Composition for Teachers. *M., W., F., at* 8. One-fifth credit. Assistant Professor FISKE.
6. Latin Literature for Teachers. *Tu., Th., at* 8. One-fifth credit. Assistant Professor FISKE.

ENGLISH.

ASSOCIATE PROFESSOR LATHROP, ASSISTANT PROFESSOR PYRE, MR. BLEYER, AND MR. FRAMPTON.

English Language.

1. Study of Prose Style. *M., Tu., W., Th., F.*, 8 *to* 10. Three-fifths credit. Mr. FRAMPTON.

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English Literature.

2. Chaucer. *M., W., F., at* 10. One-fifth credit. Mr. BLEYER.
3. General Survey of English Literature. *M., Tu., W., Th., F.,* 8 *to* 10. Three-fifths credit. Mr. BLEYER.
4. American Literature. Emerson, Hawthorne, Lowell, Longfellow, and Poe. *M., W., F., at* 10. One-fifth credit. Assistant Professor PYRE.
5. Shakespeare. *Othello, Lear,* and *The Tempest. M., Tu., W., Th., F., at* 9. Two-fifths-credit. Assistant Professor PYRE.
6. The English Drama from 1600 to the Closing of the Theaters. *M., W., F., at* 10. One-fifth credit. Mr. FRAMPTON.
7. Types of Modern Prose Fiction. *M., Tu., W., Th., F., at* 8. Two-fifths credit. Associate Professor LATHROP.
8. Tennyson. *M., W., F., at* 9. One-fifth credit. Associate Professor LATHROP.
9. The Teaching of Rhetoric and Composition, with special reference to high schools. *Tu., Th., at* 9. One-fifth credit. Associate Professor LATHROP.
10. A Study of English Classics, with direct reference to teaching. *Tu., Th., at* 11. One-fifth credit. Assistant Professor PYRE.
11. Readings from Modern English Poetry. Open to the public. No credit. Assistant Professor PYRE.

German.

PROFESSOR VOSS, ASSISTANT PROFESSOR FAUST, MR. MEISNEST, AND DR. EVANS.

1. Elementary German. *M., Tu., W., Th., F., at* 10 *to* 11 *and* 12 *to* 1. Four-fifths credit. Dr. EVANS.
2. German Conversation. *M., Tu., W., Th., F., at* 10. One-fifth credit. Mr. MEISNEST.
3. Composition and Grammar Review. *M., Tu., W., Th., at* 9. Two-fifths credit. Professor Voss.
4. Easy Prose. *M., W., F., at* 8. One-fifth credit. Mr. MEISNEST.
5. The Classical Drama. *M., Tu., W., Th., F., at* 11. Two-fifths credit. Mr. MEISNEST.
6. Advanced Readings, illustrating the history of German civilization. *M., W., F., at* 10. One-fifth credit. Professor Voss.
7. Advanced Practice in Writing and Speaking German. *M., W., F., at* 9. One-fifth credit. Assistant Professor FAUST.
8. The Drama of the Nineteenth Century. *M., W., F., at* 11. One-fifth credit. Dr. EVANS.

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9. Seminary in Goethe. Primarily for graduates. *Tu., Th.*, 9 *to* 10. One-fifth or two-fifths credit, according to the amount of outside reading. Assistant Professor FAUST.
10. Teachers' Course. *M., W., F., at* 8. One-fifth credit. Assistant Professor FAUST.
11. Introduction to the Historical Study of German. *Three hours a week.* One-fifth credit. Professor VOSS.
12. Pro-seminary in Middle High German. Professor VOSS.
13. Research. Professor VOSS (in philology) and Assistant Professor FAUST (in literature).

A course of six public lectures by Professor FAUST on the literature of the nineteenth century, and a similar course by Mr. MEISNEST on Schiller's life and works will be given at convenient hours.

French.

ASSISTANT PROFESSOR GIESE AND MR. PATZER.

1. Grammar and Elementary French. *M., Tu., W., Th., F.*, 8 *to* 10. Four-fifths credit. Mr. PATZER.
2. Conversation, Composition, and Reading from Modern Authors. *M., W., F.*, 10 *to* 12. Three-fifths credit, or, with additional reading, four-fifths credit. Assistant Professor GIESE and Mr. PATZER.
3. General Survey of the History of French Literature. *M., Tu., W., Th., F., at* 8. Two-fifths credit. Assistant Professor GIESE.

Spanish.

ASSISTANT PROFESSOR GIESE.

1. Grammar and Elementary Spanish. *M., Tu., W., Th., F., at* 9. Two-fifths credit. Assistant Professor GIESE.

Mathematics.

PROFESSOR SLICHTER, ASSISTANT PROFESSOR DOWLING, AND MISS ALLEN.

1. Algebra. *M., Tu., W., Th., F., at* 9. Two-fifths credit. Assistant Professor DOWLING.
2. Geometry. *M., Tu., W., Th., F., at* 8. Professor SLICHTER.

The equivalent of the algebra of the freshman year, College of Letters and Science, may be obtained by making up some work additional to course 1. A completion of course 2 satisfies the entrance requirement of geometry to the University.

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3. Plane Trigonometry and Logarithms. *M., Tu., W., Th., F., at* 10. Two-fifths credit. Miss ALLEN.
4. Analytic Geometry. *M., Tu., W., Th., F., at* 2. Two-fifths credit. Miss ALLEN.
5. Calculus. *M., Tu., W., Th., F., at* 3. Two-fifths credit. Miss ALLEN.
6. Theory of Equations. *M., Tu., W., Th., F.* Two-fifths credit.
7. Advanced Calculus. *M., Tu., W., Th., F.* Two-fifths credit.
8. Invariants. *M., Tu., W., Th., F.* Two-fifths credit.
9. Theory of Functions. *M., Tu., W., Th., F.* Two-fifths credit.
10. Differential Equations. *M., Tu., W., Th., F.* Two-fifths credit.
11. Partial Differential Equations. *M., Tu., W., Th., F.* Two-fifths credit.
12. Analytical Mechanics. *M., Tu., W., Th., F.* Two-fifths credit.

Of courses 6 to 9, Professor DOWLING offers two courses. Of courses 10 to 12, Professor SLICHTER offers two courses. In each instance the courses will depend upon the preferences of the students who present themselves for the work.

Physics.

PROFESSOR SNOW, PROFESSOR TROWBRIDGE, MR. TAYLOR, AND MR. MILLER.

1. General Lectures. *M., Tu., W., Th., F., at* 5. Two-fifths credit. Mr. TAYLOR.

   In the Summer Session it is designed to complete in three years the year's work of course 1 in physics, taking acoustics and optics during the summer of 1904, mechanics and heat in 1905, and electricity and magnetism during 1906.
2. Introductory Laboratory Practice. *Twenty hours per week.* One-fifth credit for each thirty hours of work performed. Mr. MILLER.
3. Theoretical Physics. Electricity and magnetism. *M., Tu., W., Th., F., at* 8. Two-fifths credit. Professor TROWBRIDGE.
4. Advanced Laboratory Practice. Electricity and magnetism. *Twenty or thirty hours a week, at* 9. One-fifth credit for each thirty hours of work performed. Professor TROWBRIDGE.
5. Thesis Work. Fifty hours per week will be necessary to complete the course. Professor TROWBRIDGE.
6. Graduate Research. Professor SNOW and Professor TROWBRIDGE.

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COURSES WITHOUT UNIVERSITY CREDIT.

7. Lectures. Mechanics and heat, electricity and magnetism, acoustics and optics. Professor SNOW.
8. Elementary Laboratory Practice. *M., Tu., W., Th., F., S.*, 8 *to* 1. Mr. MILLER.

Chemistry.

PROFESSOR DANIELLS, PROFESSOR KAHLENBERG, DR. SCHLUNDT, AND MR. HUTCHINS.

1. General Chemistry. Lectures. *M., Tu., W., Th., F., at* 11. Three-fifths credit for lectures and laboratory work. Professor DANIELLS.
2. A Teachers' Laboratory Course of Experimental Chemistry. Professor DANIELLS.
3. Qualitative Analysis. Professor DANIELLS, Dr. SCHLUNDT, and Mr. HUTCHINS.
4. Quantitative Analysis. Professor DANIELLS, Dr. SCHLUNDT, and Mr. HUTCHINS.
5. Physical Chemistry. Lectures. *M., Tu., W., Th., F., at* 8. Laboratory work in physico-chemical measurements. Four-fifths credit. Professor KAHLENBERG and Dr. SCHLUNDT.
6. Advanced Physical Chemistry. Professor KAHLENBERG and Dr. SCHLUNDT.
7. Research in Physical Chemistry. Professor KAHLENBERG.
8. Chemical Preparations. Professor KAHLENBERG and Dr. SCHLUNDT.

Geology and Physical Geography.

MR. BALL.

1. Physiography. Lectures. *M., Tu., W., Th., F.*, with excursions two or three times a week. Two-fifths credit.
2. Field Geology. Two-fifths or three-fifths credit, according to work done.

   Class Excursions. One-fifth credit may be granted for a satisfactory written report on the work of all class excursions, not exceeding three a week.

Mineralogy and Petrology.

PROFESSOR HOBBS.

1. Determinative Mineralogy. *M., Tu., W., Th., F.* Two-fifths credit.
2. Petrology. *M., Tu., W., Th., F.* Two-fifths credit.

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Zoology.

ASSISTANT PROFESSOR MARSHALL AND ASSISTANT.

1. General Zoology. Lectures. *M., Tu., W., Th., F., at* 10. Ten laboratory hours per week. Three-fifths credit.
2. Entomology. Lectures. *Tu., Th., F., at* 11. Laboratory work two hours daily. Either may be taken separately or together with three-fifths credit.

Anatomy.

ASSISTANT PROFESSOR MILLER AND DR. B. M. ALLEN.

1. Mammalian Anatomy. *Laboratory work daily,* 11 *to* 1. Three-fifths credit.
2. Histology. Lectures. *M., W., F., at* 9. *Laboratory hours M., W., F.,* 10 *to* 11; *Tu., Th.,* 9 *to* 11. Three-fifths credit.
3. Modern Laboratory Methods. For advanced and graduate students. *Laboratory hours, M., Tu., W., Th., F.,* 11 *to* 1.

Botany.

PROFESSOR HARPER AND MR. ALLEN.

1. General Botany. Lectures: *M., W., Th., at* 9. Laboratory work: *Tu., F.,* 9 *to* 11; *M., W., Th.,* 10 *to* 11. Professor HARPER and Mr. ALLEN.
2. Mosses and Ferns. *Three times a week, M. to W.* Professor HARPER and assistant.
3. Algæ. *Three time a week; M. to F.* May be taken in connection with course 2, the two together giving a three-fifths credit. Professor HARPER and assistant.
4. Mycology. Professor HARPER.
5. Morphology of the Flowering Plants. *Daily laboratory work and two lectures a week.* Mr. ALLEN.
6. Physiology of the Cell. *Daily, M. to F.* Professor HARPER and Mr. ALLEN.
7. Special Physiology of the Flowering Plants. A laboratory course. Professor HARPER.

Excursions in connection with courses 1 to 4.

Bacteriology and Hygiene.

ASSISTANT PROFESSOR FROST.

1. Public Health Lectures. One lecture a week.
2. Elementary Bacteriology. Lectures and laboratory work. Lectures, *M., to F., at* 8; laboratory work ten hours a week. Three-fifths credit.

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3. Advanced Bacteriology. One-fifth credit for each thirty hours of work performed.

Physical Training.

DR. ELSON, MR. HOLMES, AND MISS MAYHEW.

The University Gymnasium is open to all students of the Summer Session, without additional fees, except a charge of fifty cents for a locker.

Light Gymnastics. Instruction and practice in the various gymnastic drills, in free movements, and with dumb-bells, wands, and clubs; methods of conducting classes, setting-up exercises, and all forms of the lighter gymnastics, including gymnastic games.

Heavy Gymnastics. Advanced work is given on the horizontal, vaulting, and parallel bars; horses, bucks, flying and traveling rings, trapeze; tumbling, simple and advanced jumping, etc.

Swimming. Daily classes. Methods of rescuing drowning persons. Practical instruction in what to do in emergencies.

NORMAL COURSE.

(a) Lectures on the theory and physiology of excercise.

(b) Lectures on First Aid to the Injured.

(c) Instructions in all forms of light and heavy gymnastics and in methtods of conducting gymnasium classes; a special course in gymnastic games.

The Normal classes are open to men and women. Further information may be had by addressing the Director of the Gymnasium.

Class Gymnastics: Daily, at 4.

Normal Class in Gymnastics: *Tu., Th., S., at* 5.

Classes in Swimming, for Women: *M., W., F., at* 5. *Tu., Th., S., at* 11.

Physical Education for Women.

ABBY S. MAYHEW.

1. A general course in Gymnastics. Four days a week, *at* 12 *or* 4. One-fifth credit.
2. Theory of Physical Education. *M., Tu., W., Th., F.*, 11 *or* 3. Two-fifths credit.

For further information address ABBY S. MAYHEW, Women's Gymnasium.

THE WISCONSIN SUMMER SCHOOL.

The work of the Summer School is consolidated with that of the Summer Session. The courses of study formerly given in the Sum-

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mer School are included in the Summer Session and will be found announced under the appropriate departments of study on preceding pages. The terms of admission to the school remain as heretofore, and the fee is the same as that for the Summer Session. The Summer School courses will be found adapted, as heretofore, to recent high school graduates who intend to enter the University; to University and college students who expect to teach and desire to review the studies which they will be called upon to teach; to teachers who wish to study the principles of teaching and still further prepare themselves in the branches in which they are giving instruction; to principals and superintendents who desire aid to the better understanding of the theory and practice of their work. Persons who intend to take the state examinations for teachers will also find means of completing their preparation.

SUMMER SCHOOL FOR ARTISANS AND APPRENTICES.

This school of shop work and laboratory practice has been established for the benefit of machinists, carpenters, or sheet-metal workers; stationary, marine, or locomotive engineers; shop foremen and superintendents; superintendents of waterworks, electric light plants, power stations, factories, large office and store buildings in cities, and for young men who wish to qualify themselves for such positions. The session is six weeks in length and extends from July 6 to August 14. The tuition fee is $15, to which are added small laboratory and shop fees.

SUMMER SCHOOL FOR LIBRARY TRAINING.

The Wisconsin Free Library Commission announces the tenth annual session of the Summer School for Library Training. Two courses are offered.

Elementary Course. June 13 to August 6. For this course there will be no charge for tuition to students who are employed in Wisconsin libraries. For others the fee is $20. Students are required to register on Saturday, June 11.

Supplementary Course. July 4 to 30. Miss MARY W. PLUMMER, of Pratt Institute, will lecture on the history of libraries; W. IRVING WAY of Chicago, on the history of printing; and members of the faculty of the University of Wisconsin on bibliography and literature. Tuition, $15. Students must register July 2.

For further information address the Wisconsin Free Library Commission, Madison, Wis.

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THE GRADUATE SCHOOL.

FACULTY.

CHARLES R. VAN HISE, Ph. D., LL. D., President of the University.

JOHN B. PARKINSON, A. M., Vice-President. Professor of Constitutional and International Law.

T. S. ADAMS, Ph. D., Assistant Professor of Economics and Statistics.

S. M. BABCOCK, Ph. D., Assistant Director and Chief Chemist of the Agricultural Experiment Station. Professor of Agricultural Chemistry.

C. R. BARDEEN, M. D., Professor of Anatomy.

E. A. BIRGE, Ph. D., Sc. D., LL. D., Dean of the College of Letters and Science. Professor of Zoology.

STORM BULL, M. E., Professor of Steam Engineering.

C. F. BURGESS, E. E., Assistant Professor of Electrical Engineering.

C. H. BURNSIDE, M. A., Assistant Professor of Mechanics.

W. B. CAIRNS, Ph. D., Assistant Professor of American Literature.

VICTOR COFFIN, Ph. D., Assistant Professor of European History.

J. R. COMMONS, A. M., Professor of Political Economy.

G. C. COMSTOCK, Ph. B., LL. B., Director of Washburn Observatory. Professor of Astronomy.

W. W. DANIELLS, M. S., Sc. D., Professor of Chemistry.

R. E. N. DODGE, M. A., Assistant Professor of English.

L. W. DOWLING, Ph. D., Assistant Professor of Mathematics.

F. O. DUFOUR, C. E., Acting Professor of Bridge Engineering.

R. T. ELY, Ph. D., LL. D., Professor of Political Economy.

E. H. FARRINGTON, M. S., Professor of Dairy Husbandry.

A. B. FAUST, Ph. D., Assistant Professor of German.

N. M. FENNEMAN, Ph. D., Professor of General and Physiographic Geology.

RICHARD FISCHER, Ph. D., Assistant Professor of the Theory and Practice of Pharmacy.

C. R. FISH, Ph. D., Assistant Professor of American History.

G. C. FISKE, Ph. D., Assistant Professor of Latin.

D. B. FRANKENBURGER, A. M., LL. B., Professor of Rhetoric and Oratory.

J. C. FREEMAN, LL. D., Professor of English Literature.

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W. D. FROST, M. S., Assistant Professor of Bacteriology.
LUCY M. GAY, B. L., Assistant Professor of French.
W. F. GIESE, A. M., Assistant Professor of Romance Languages.
R. A. HARPER, Ph. D., Professor of Botany.
G. L. HENDRICKSON, B. A., L. H. D., Non-resident Professor of Latin.
W. A. HENRY, Agr. B., Dean of the College of Agriculture, and Director of the Agricultural Experiment Station. Professor of Agriculture.
H. W. HILLYER, Ph. D., Assistant Professor of Organic Chemistry.
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JOSEPH JASTROW, Ph. D., Professor of Psychology.
LOUIS KAHLENBERG, Ph. D., Professor of Physical Chemistry.
ALEXANDER KERR, A. M., Professor of the Greek Language and Literature.
EDWARD KREMERS, Ph. G., Ph. D., Professor of Pharmaceutical Chemistry.
A. G. LAIRD, Ph. D., Assistant Professor of Ancient Languages.
H. B. LATHROP, A. B., Assistant Professor of English Literature.
C. K. LEITH, Ph. D., Professor of Economic and Structural Geology.
VICTOR LENHER, Ph. D., Assistant Professor of General and Theoretical Chemistry.
W. S. MARSHALL, Ph. D., Assistant Professor of Zoology.
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D. C. MUNRO, A. M., Professor of European History.
J. E. OLSON, B. L., Professor of the Scandinavian Languages and Literature.
M. V. O'SHEA, B. L., Professor of the Science and Art of Education.
E. T. OWEN, Ph. D., Professor of the French Language and Literature.
J. F. A. PYRE, Ph. D., Assistant Professor of English Literature.
P. S. REINSCH, Ph. D., Professor of Political Science.
A. W. RICHTER, M. E., Professor of Experimental Engineering.
E. C. ROEDDER, Ph. D., Assistant Professor of German Philology.

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E. P. SANDSTEN, Ph. D., Professor of Horticulture.
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F. C. SHARP, Ph. D., Assistant Professor of Philosophy.
GRANT SHOWERMAN, Ph. D., Assistant Professor of Latin.
J. W. SHUSTER, B. S., Assistant Professor of Electrical Engineering.
E. B. SKINNER, Ph. D., Assistant Professor of Mathematics.
M. S. SLAUGHTER, Ph. D., Professor of Latin.
C. S. SLICHTER, M. S., Professor of Applied Mathematics.
C. F. SMITH, Ph. D., Professor of Greek and Classical Philology.
L. S. SMITH, C. E., Assistant Professor of Topographic and Geodetic Engineering.
B. W. SNOW, Ph. D., Professor of Physics.
S. E. SPARLING, Ph. D., Assistant Professor of Political Science.
SUSAN A. STERLING, M. L., Assistant Professor of German.
B. V. SWENSON, E. E., Assistant Professor of Electrical Engineering.
W. D. TAYLOR, C. E., Professor of Railway Engineering.
A. W. TRESSLER, A. B., Inspector of Schools.
AUGUSTUS TROWBRIDGE, Ph. D., Professor of Mathematical Physics.
F. E. TURNEAURE, C. E., Dean of the College of Engineering.
F. J. TURNER, Ph. D., Professor of American History.
C. A. VAN VELZER, Ph. D., Professor of Mathematics.
E. K. VOSS, Ph. D., Professor of German Philology.
A. R. WHITSON, B. S., Professor of Agricultural Physics.
W. H. WILLIAMS, A. B., Professor of Hebrew and Hellenistic Greek.
F. W. WOLL, M. S., Assistant Professor of Agricultural Chemistry, and Chemist of Experiment Station.
J. A. WOODBURN, Ph. D., Professor of American History.
O. B. ZIMMERMAN, M. E., Assistant Professor of Machine Design.

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C. E. ALLEN, B. S., Instructor in Botany.
KATHERINE ALLEN, Ph. D., Instructor in Latin.
ARTHUR BEATTY, Ph. D., Instructor in English.
B. H. BODE, Ph. D., Instructor in Philosophy.
R. H. DENNISTON, B. S., Instructor in Pharmaceutical Botany.
JEROME DOWD, M. A., Resident Lecturer in Sociology.
M. B. EVANS, Ph. D., Instructor in German.

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F. T. KELLY, Ph. D., Instructor in Hebrew and Hellenistic Greek.
U. B. PHILLIPS, Ph. D., Instructor in History.
C. C. SELLERY, Ph. D., Instructor in European History.
G. C. SHAAD, B. S., Instructor in Electrical Engineering.
H. C. TAYLOR, Ph. D., Instructor in Commerce.
H. J. THORKELSON, M. E., Instructor in Steam Engineering.
A. C. TILTON, Ph. D., Instructor in European History.

ADMINISTRATIVE COMMITTEE.

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F. E. TURNEAURE, C. E., Dean of the College of Engineering.
W. A. SCOTT, Ph. D., Director of the Course in Commerce.
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P. S. REINSCH, Ph. D., Professor of Political Science.
H. L. RUSSELL, Ph. D., Professor of Bacteriology.
F. J. TURNER, Ph. D., Professor of American History.

CLUBS FOR RESEARCH.

For the reading of papers and for discussion, instructors and students meet periodically in various voluntary associations; such are:

THE CLASSICAL CLUB,
THE LANGUAGE AND LITERATURE CLUB,
THE ENGLISH CLUB,
THE PHILOSOPHICAL CLUB,
THE GERMAN JOURNAL CLUB.
THE CHEMICAL CLUB,
THE BIOLOGICAL CLUB,
THE BOTANICAL CLUB.

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ORGANIZATION.

Previous to 1895 the graduate work of the University had no separate organization. In that year this work was made a department, and placed under the control of a committee on graduate studies. In 1904 the graduate work of the University was formally organized as a graduate school, and placed in charge of a committee called the Administrative Committee of the Graduate School. The Graduate School includes work in the various departments of the College of Letters and Science, the College of Engineering, and the College of Agriculture. The degrees conferred are Master of Arts, Master of Science, Civil Engineer, Mining Engineer, Electrical Engineer, and Doctor of Philosophy.

The faculty of the Graduate School consists of the professors and instructors who are doing investigative or scholarly work, and who offer graduate courses.

The supervision of the graduate students is entrusted to the Chairman and Secretary of the Administrative Committee. Students are expected to report to the Chairman or Secretary at Room 6, University Hall, soon after reaching Madison.

AIMS AND METHODS.

The Graduate School is organized for the training of scholars and investigators, and for productive work.

The undergraduate work of the University may be so arranged as to lead naturally to graduate study. Intermediate between courses designed primarily for undergraduates and those designed primarily for graduates, are courses given for undergraduates and graduates. Each undergraduate student takes a major study continuing through at least two years, and this work, with the opportunity for electives in the major, in cognate lines, and in studies preparatory to the major, enables the student to obtain a broad education, and at the same time to converge his work to a point, and hence be ready for efficient graduate work.

In this connection it may be said that the requirement of theses for baccalaureate degrees often results in the beginning of investigations in which the students become deeply interested. The spirit of research thus aroused is likely to lead such students to enter the Graduate School.

In the Graduate School the University aims to give strong graduate instruction in each of its various departments. Already excellent opportunities for such instruction are afforded. The lectures for graduates aim to treat the various sub-

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jects in the light of the latest advancements in knowledge. In those departments in which the professors are productive scholars or investigators, the lectures embody the results of their work, and state unsolved problems. The graduate students are made co-workers upon these problems. Much stress is laid upon cooperation and joint work of professors and students in the laboratories and seminaries. The able students who share in the work of the professors thereby gain the spirit and method of research. Such cooperative work develops the capacity to carry on scholarly and investigative work independently of the professors.

COURSES FOR GRADUATES.

In all of the departments of the University courses are offered for undergraduates and graduates, and in many of them, courses primarily for graduates. These courses are described under the above headings in the departments of study in which they are offered in the College of Letters and Science, the College of Engineering, and the College of Agriculture.

For descriptions of these advanced courses, see philosophy (pp. 91-93), education (pp. 93-94), history (pp. 95-100), political economy (pp. 101-110), political science (pp. 111-114), Greek (pp. 114-117), Latin (pp. 118-120), Hebrew and Hellenistic Greek (pp. 121-123), English (pp. 125-127), German (pp. 133-136), Scandinavian (p. 138), the Romance languages (pp. 140-142), mathematics (pp. 143-145), astronomy (pp. 145-146), physics (pp. 146-149), chemistry (pp. 151-154), geology (pp. 156-158), zoology (p. 159), anatomy (p. 160), botany (pp. 161-164), bacteriology (pp. 165-166.) For the courses in civil, mining, and electrical engineering, see Graduate Courses, p. 205; and for courses in agriculture, see p. 254.

The special announcement of the Graduate School, giving full information with reference to this School, may be obtained by application to the Registrar of the University.

FELLOWSHIPS AND SCHOLARSHIPS.

University Fellowships.

For the purpose of promoting higher scholarship and more extended original study than the academic courses afford, the Regents have established thirteen university fellowships of $400 each, of which two are especially devoted to Latin and Greek, two to Economics and Political Science, two to History, and one to German.

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The following are the regulations respecting these fellowships:

1. Any fellowship to which the present regulations apply may be held by any graduate of a college of recognized standing or by any one whose education is equivalent to that represented by a college degree. Those about to take such a degree are eligible as candidates, the regulations applying to the time of entrance upon the duties of the fellowship. Men and women are equally eligible.

2. Fellowships will be granted upon application only, which should be made upon a special blank form furnished by the Registrar of the University; such application, with accompanying evidence of merit, attainment and ability, to be in the hands of the President before May 1st of the collegiate year preceding that during which the fellowship is held.

3. All fellowships will be filled each year. Fellows may be reelected for one additional year only.

4. Application must be accompanied by evidence of scholarship, ability and general worthiness; such as theses (whether prepared for this or other purposes), published writings, testimonials from instructors, outline of educational course pursued, special distinctions gained, and the like. Applications for reappointment should contain a full account of the work of the preceding year. Applications, to receive attention, must contain a definite statement of the special studies which the applicant intends to pursue.

5. The fellowships will be assigned to the several departments according to the studies which the fellows intend to pursue.

6. Each fellow shall pursue his studies under the direction of the professor or professors in charge of his special studies. Assignment of University services to the fellows shall be made by the President in consultation with the head of the department to which the fellow has been assigned, and the work assigned may be equivalent to one hour of teaching daily, or the supervision of laboratory work for two hours daily.

7. At a meeting of the Faculty in the month of May (which meeting shall be duly announced as the meeting for the election of fellows), the President shall call upon the several heads of the departments in which applications have been received, to make a statement of the merits of the candidates in their departments. After all such statements have been made, the members of the Faculty will cast their ballots for as many candidates as there are fellows to be elected, and those receiving the highest number of votes (provided that each receive a majority of the votes cast) shall be recommended to the Board of Regents for appointment to fellowships.

Vacancies in fellowships, due to resignation or other cause, may be filled as they occur, at the option of the Faculty.

Honorary Fellowships.

The Regents have established honorary fellowships, equal in number to the regular fellowships, and filled in a similar way. These are restricted, however, to such persons as have already held

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academic honors, such as fellowships. No compensation is attached to these positions except the remission of University fees, and no teaching service is required; but to be eligible to an honorary fellowsnip one must be a graduate of at least one year's standing.

The Biblical Alliance Fellowship.

The Biblical Alliance of Wisconsin has established a fellowship in Hebrew or Hellenistic Greek of the value of $400 annually.

The Hebrew Fellowship.

The Hebrew Lectureship and Scholarship Society offers a fellowship, of the value of $400, for special excellence in Hebrew studies.

The Gustav A. Kletzsch Fellowship.

Through the generosity of Gustav A. Kletzsch, M. D., of Milwaukee, a fellowship in Bacteriology was established in 1901, yielding $400 annually.

The Social Settlement Fellowships.

Citizens of Milwaukee have established a University Social Settlement Fellowship in the School of Economics and Political Science, of the value of $400. Other friends of the University offer a fellowship in the same school, to be known as the Chicago Social Settlement Fellowship, of the value of $300.

Graduate Scholarships.

The Regents of the University maintain twelve graduate scholarships, of the value of $225 each, nine of which are assigned to the College of Letters and Science, and three to the College of Engineering. Of the nine assigned to the College of Letters and Science, two are designated for Economics and Political Science, one for European history, and one for American history.

University scholars are required to pay the regular incidental fee, but not the non-resident tuition fee.

A friend of the University has founded a scholarship known as the *Henrik Wergeland Graduate Scholarship*, of the value of $200 annually, open to graduate students of Norwegian ancestry.

In 1900, public-spirited citizens of Sheboygan established a *Graduate Scholarship in Germanic Philology*, of the annual value of $300.

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Mr. F. W. Allis, of Madison, has generously established a *Graduate Scholarship in German Philology*, of the annual value of $200, available for the first time in 1904-05.

A scholarship for Japanese students, amounting to $50 annually for four years, has been founded by Mr. Benj. K. Miller, of Milwaukee.

The Wisconsin League of Municipalities has founded a scholarship in Municipal Government, which yields about $200.

The Biblical Alliance of Wisconsin contributes $1,500 annually for the encouragement of studies in the department of Hebrew and Hellenistic Greek, a part of which amount goes to graduate students.

REQUIREMENTS FOR HIGHER DEGREES.

Second Degrees.

The degrees of *Master of Arts* and *Master of Science* are conferred upon graduates of the University who have previously taken the degrees of *Bachelor of Arts* and *Bachelor of Science*, respectively, and who, after graduation, pursue an approved course of study equivalent to the work of one year of graduate study in the University. A thesis must be offered as one of the conditions for the *second* degree, unless an acceptable thesis has been already presented for the bachelor's degree. To be excused from preparing a thesis for the master's degree, the candidate must continue graduate studies in the department in which the undergraduate major lay, and must apply, on the recommendation of the instructor under whom the thesis was prepared, for such excuse not later than November 1st of the academic year in which the degree is sought. Students who desire to do part of their study for the master's degree *in absentia* may accomplish by this method not more than half of the work required for the degree. At least one semester must be spent in residence at the University.

The work must consist of one major and one minor subject, must be in the general line of advanced study implied by the degree sought, and must be approved by the Committee on Graduate Studies. Two-thirds of this study must be devoted to the major subject and one-third to the minor. For the above degrees, study for a profession will not be accepted, but original investigation in connection with a profession, or special and scholarly study collateral to it, may be accepted, at the discretion of the Faculty.

Graduates of this or of similar institutions who pursue the course in law at the University, and who, by reason of their su-

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perior training, are able to take additional studies advantageously, may receive a second degree at graduation from the College of Law, on condition of having satisfactorily pursued graduate studies in the College of Letters and Science equivalent to five hours a week during the two years of their course, and on complying with the other required conditions.

The degrees of *Civil Engineer*, *Mechanical Engineer*, and *Electrical Engineer* are conferred as second degrees upon *Bachelors of Science* in the civil, mechanical, and electrical engineering courses respectively: (1) who pursue advanced professional study at the University for one year and present a satisfactory project or thesis; or (2) who furnish suitable evidence of three years of professional work (of which one must be spent in a position of responsibility), and present a satisfactory thesis.

The University offers its higher degrees to graduates of other institutions of high standing who shall reside at the University and pursue the requisite studies under the immediate direction of the Faculty.

DOCTOR'S DEGREE.

The degree of *Doctor of Philosophy* will be conferred upon successful candidates after not less than three years' of graduate study, of which the first two years, or the last year, must be spent at this University. Candidates for this degree will be examined on three subjects, one major and two minor, which must be approved by the Administrative Committee of the Graduate School, not later than the beginning of the year in which the candidate expects to take the degree. However, the degree of Doctor of Philosophy will not be conferred simply on the ground of study for a definite length of time. Special attainments are requisite, particularly the power of independent investigation, the evidence of which must be shown by the production of a thesis embodying original research. The thesis must be placed in the hands of the Administrative Committee at least two months before the close of the academic year. The subject of the thesis must have the approval of the head of the department in which the major subject is carried on as early as November 1st of the academic year in which the candidate expects to take his degree.

In case the candidate is successful, he is required to put his thesis into print and deposit *one hundred* copies of the same in the library of the University. If the thesis is printed in some journal, or as a bulletin of the University, reprints therefrom will

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be accepted by the Librarian, but these must be provided with a special cover and title page in proper thesis form. The diploma may be conferred before the thesis is printed, provided a written or typewritten copy is deposited with the Librarian, and the sum of fifty dollars with the Secretary of the Regents. The money will be refunded on presentation of the printed copies.

All candidates for this degree must have a reading knowledge of French and German, which must be certified to by the departments of French and German at least one year before the degree is conferred.

EXPENSES FOR GRADUATE INSTRUCTION.

Graduate students, except honorary fellows, pay the same fees as undergraduates, whether they are in attendance at the University or *in absentia;* but fellows and University scholars are not required to pay the non-resident tuition fee. For details, see Fees and Expenses, p. 72.

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DEGREES.

CONFERRED ON COMMENCEMENT DAY, 1903.

COLLEGE OF LETTERS AND SCIENCE.

Bachelor of Arts.

ANCIENT CLASSICAL COURSE.

George Tyler Bigelow, Jr.
Fannie Elizabeth Brayton.
Edna Dessaint.
Callista Angeline English.
Edward Joseph Filbey.
May Martin Humphrey.
Elizabeth Joyce Hunter.
Charles Fred Lemke.
Gertrude Sarah Matteson.
Howell Albro Gardiner Parks.
Adolf Pfund.
Stephen Carpenter Phipps.
William Theodore Runzler.
Mabel Beatrice Ruste.
May Lillian Savage.
Lulu Pearl Shaw.
Orin Lorenzo Stinson.
Elizabeth Goffe Ticknor.
Clyde Louis Townsend.
Norma Curtis Wood.
Roland Zinns,

Bachelor of Letters.

MODERN CLASSICAL COURSE.

Julia Marjorie Anderson.
Alice Jean Bevans.
Gertrude Melin Bossard.
George Challoner.
Mary Persis Coleman.
Cathaleen Mae Craigo.
Robert Conrad Disque.
Grace Shirley Dixon.
Theo. Elizabeth Donelly.
Clarence William Gregory.
Emma Gertrude Jaeck.
Guinevieve Mihills.
Grace Elizabeth Miller.
Mabel Odell.
Mary Patricia Osborne.
Anna May Pelton.
Jesse Mary Pelton.
Beulah Celecta Post.
Grace Louvan Pritchard.
Mary Fellows Pritchard.
Daphne Wilton Putnam.
Amelia France Pyre.
Herman Gustav Milbrandt.
Bertha Riedesel.
Julia Hill Rindlaub.
Olive Grace Runner.
Ruth Bogardus Safford.
Mary Gertrude Hemenway Stoner.
Mae Pearl Telford.
Edmon Farnese Cecil Turner.
Minna Elizabeth Weber.
Mignon Wright.

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CIVIC HISTORICAL COURSE.

Clara Marie Barkhausen.
Hamlet Joseph Barry.
Edwin Sherwood Bishop.
Willis Edge Brindley.
Eugene Hugh Byrne.
Henry Fayette Carpenter.
Wallace Reeves Clark.
Mary Florence Cunningham.
Herbert Clay Fish.
Henry Edward Foelske.
Wilbur Thomas Foster.
Charles Harold Gaffin.
Grace Alice Gibson.
Jane Mae Goddard.
William George Hamilton.
Charles Edward Hammersley.
Homer C. Hockett.
Harriet Louise Hughes.
Mary Lucretia Jenkins.
Harry C. Johnson.
Herbert David Laube.
Lawrence Andrew Liljequist.
James Woodward McCrossen.
Anna Eulalia McDonald.
Florence Eugenie Van Slyke Nelson.
Julia Sherlock Osborne.
George Addison Perham.
George Coleman Poage.
Lloyd Winston Pullen.
Louis Frederick Rahr.
Samuel Crawford Ross.
Edith Arabel Rumsey.
Robert Hill Titus.
Rodger Murphy Trump.
Lucas Schuyler Van Orden.
Stuart Erdman Washburn.
Josephine Adelaide Wells.
Georgiana Mary Whitcomb.

ENGLISH COURSE.

Mina Aletha Anderson.
Ruth Catharine Andrews.
Percy Ap Roberts.
Sybil Barney.
Jean Frank Bishop.
Grace Marie Bradley.
Alexander Oscar Corstvet.
Robert Storey Crawford.
James Francis Dougherty.
Joseph Turner Flint.
Clara Garner Froelich.
William John Hagenah.
William Harrison Haight.
Emil John Haumerson.
Andrew Winkle Hopkins.
Anna Jacobsen.
Evelyn Lena Johnson.
Alexander Kasberg.
Anna Belle King.
Oscar William Kreutzer.
Arne Christopher Lerum.
Beach Woodruff Maguire.
Frances Belle Marshall.
Eben Roger Minahan.
Bess Lorraine Morrison.
Henry Heames Otjen.
Lillian Ethel Richards.
Vera Belle Salter.
Elsa Amelia Sawyer.
Imelia Josephine Shinde.
Albert Edward Showers.
Phebe Maud Smith.
Mitchell Charles Stewart.
Mary Estella Stiles.
Charles Harry Stone.
Anna Storm.
Edward Walter Thuerer.

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COMMERCE COURSE.

Richard Hamlin Hollen.
Herbert Frank John.
Lyman Arnquist Libby.
John Vincent Murphy.
Ezra Thaddeus Oftelie.
Peter Verner Petersen.

ECONOMICS GROUP.

Stuart Jamieson Fuller.

GERMAN GROUP.

Emma Maria Roemer.

HEBREW GROUP.

George Wesley Briggs.

HISTORY GROUP.

Jessie Myrtle Pelton.

MATHEMATICS GROUP.

Rufus Judah Friedman.
Robert Oliver Gibbons.
Theo Beatrice Pickford.
Voyta Wrabetz.

POLITICAL SCIENCE GROUP.

Adolph Herman Roethke.

Bachelor of Science.

GENERAL SCIENCE COURSE.

David Luther Barnard.
Persis May Bennett.
Edward Grant Birge.
Raymond Morgan Chapman.
Arthur Henry Christman.
Paul Wiswall Clough.
Luella Davey Cook.
Herbert Leigh Cook.
Paul Herman Dernehl.
Harold Everett Eggers.
Newell Clark Gilbert.
George Julius Heuer.
Joseph Gerard Holty.
Dorothy McCulloch.
William George Marquette.
Joseph Howard Mathews.
Hugo Albert Pauly.
Rawson Joseph Pickard.
Adolph Belmont Smith.
Herman Augustine Smythe, Jr.
Howard MacDonald Stewart.
Frank Adolph St. Sure.
Carroll Harvey Wegeman.

COMMERCE COURSE.

Peter O. Anderson.

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MATHEMATICS GROUP.

Lucinda Elizabeth Flemming. Anna Dale Middleton.

PHYSICS GROUP.

Lizzie Cacendra Bissel.

Bachelor of Philosophy in Pedagogy.

Joseph David Beck.
Francis Moore Bray.
Frank Cronin Bray.
Helen Alice Case.
Edna Browning Cook.
Lillian Adella Cook.
Alletta Friscone Dean.
Margaret Fehr.
Charles Baldwin Gates.
Gustav William Gehrand.
Marie Blanche Germond.
Arnold Lucius Gesell.
John Francis Graber.
August Grimm.
Constance Haugen.
Willard Henry Hein.
Denis Lawrence Hennessey.
Aaron Heyward.
Ira Odell Hubbard.
Sara Davis Jenkins.
Henry William Kircher.
William Foster Lusk.
Stephen John McMahon.
Mary Bell McMillan.
Anne Holmquist McNeil.
Chester William McNown.
Walter Alvin Nicholas.
Maurice Barstow Nichols.
Alma Marie Peterson.
Allan Theron Pray.
William Burt Robertson.
Elinore Emilie Russell.
Albert Henry Schubert.
Benedick Oliver Skrivseth.
Janet Scoular St. John.
Henry C. Stair.
Abbie Celina Terry.
Stephen Miles Waterbury Thomas.
Hassa La Maude Yule.

COLLEGE OF MECHANICS AND ENGINEERING.

GENERAL ENGINEERING COURSE.

Charles Frederick Goodenough. William Otis Hotchkiss.

CIVIL ENGINEERING COURSE.

Walter Kelsey Adams.
Hugo Ernst Charles Brandt.
Harry James Cowie.
Arthur Clayton Greaves.
Alvin Haase.
John Francis Hahn.
George Robertson Keachie.
Olaf Laurgaard.
Francis Michael McCullough.
William Coleman McNown.
Claude Halpine Perry.
Henry Jenness Saunders.
John Lucian Savage.
Harold Lyle Stevens.
John Wilson.

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MECHANICAL ENGINEERING COURSE.

Arthur Edward Anderson.
Garrison Culy Dean.
John Seabury Dean.
Courtney Carlos Douglas.
Henry John Geerlings.
Ray Harrison Hadfield.
Henry Phelps Howland.
Arthur Louis Johnson.
Benjamin Franklin Lyons.
Rowland Hill Morrison.
Louis Henry Rueping.
Adrian August Wedemeyer.
Herbert Lucius Whittemore.

ELECTRICAL ENGINEERING COURSE.

Benjamin Cullen Adams.
Hiram Edwin Bailey.
John William Belling.
William John Bertke.
John Everett Brobst.
Lewis Raymond Brown.
John Nelson Cadby.
Emil Alfred Ekern.
Howard Stickney Elliott.
John Henry Friend.
Jotham Clark Gapen.
James Goudie.
Charles Joseph Hejda.
Frederick William Huels.
Robert Garfield Krumrey.
Henry Leslie Lea.
Sylvan Joseph Lisberger.
Edgar Bruno Mueller.
John Pugh.
Arthur Joseph Quigley.
William Jonathan Rowe.
Irving Seaman.
Will Spalding.
Frederic Carl Weber.
Frank Gardner Willson.
Frank Palmer Woy.

APPLIED ELECTROCHEMISTRY COURSE.

Minot James Hill.
William Roy Mott.
Clarence Irving Zimmerman.

COLLEGE OF AGRICULTURE.

Richard Bowen Johns.
John Chambers McDowell.
William Bonner Richards.

COLLEGE OF LAW.

Bachelor of Laws.

Charles Henry Abercrombie.
Henry Wilfred Adams.
Samuel Edward Andrews.
Frederick S. Arnold.
Louis Asa Avery.
Arthur Algernon Baldwin.
Oscar John Bandelin.
Winchel Fay Barber.
John McHenry Barney.
Arthur Franz Beule.
Arthur William Blackburn.
George Joseph Bowler.
Hubert Daniel Buchanan.
William David Buchholz.

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Charles Lewis Burnham.
Henry Casson, Jr.
George Frances Kinney.
Otto Kuenzli.
Herman Leicht.
Robert William Lueck.
John Thomas Stuart Lyle.
Claude Zeph Luse.
Paul Robert McKee.
Henry Mahoney.
John Albert Malone.
Fred D. Merrill.
James Carlos Morgan.
Wayne Thornton Mosely.
Edward Milo Muckleston.
James Murray.
John Merrill Cochrane.
George Bernard Cunningham.
George Gregory Curtis.
George Jonathan Danforth.
William Frederick Dickinson.
George Christopher Douville.
Sephus Earl Driver.
Robert Allan Edgar.
William John Foulkes.
John Garvin.
James Finley Gibson.
Henry Graass.
Max Wilder Griffith.
Richard Guille Harvey.
Gjermund O. Haugen.
George Heller, Jr.
George Roy Howitt.
Gustav Binsfeld Husting.
Fred Dickinson Jewitt.
Harry Page Keith.
Louis Martinius Nelson.
Charles Sumner Pearce.
Allan Theron Pray.
Thomas Mortimer Priestley.
Charles Lambert Purves.
Louis J. Quammen.
Seth Whiteley Richardson.
Charles Darwin Rosa.
John Fordman Sedgwick.
Edward J. B. Schaubring.
John Charles Stevens.
George Brewster Swan.
Charles Thomas Taylor.
Tore Teigen.
Carl N. Thompson.
Eugene John Wehmhoff.
Warde Arthur Wescott.
Simon Patrick Wilson.
George Lee Winegar.
Evan Erastus Young.

SCHOOL OF PHARMACY.

PHARMACY COURSE.

Alfred Emil Kundert.
Emile Augustus Ross.

Graduate in Pharmacy.

Joseph Jacob Beck.
Elmer Johann Falk.
Peter Oscar Fox.
Edmond Richard Hass.
Conrad Charles Lehman.
Frank Rabak.
Henry James Werner.
Harold Arthur Whittaker.
Carl William Ziepprecht.

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SCHOOL OF MUSIC.

GRADUATES IN MUSIC.

Daisy Hansen.
Wilhelmina Elizabeth Kraemer.
Grace Emma Munroe.
Theo. Beatrice Pickford.
Mary Katharine Renk.
May Lillian Savage.

HIGHER DEGREES.

Master of Arts.

Arthur William Blackburn, A. B. (University of Wisconsin), in American History and European History—

*THESIS: Some social and economic factors in the development of Racine county.

William Burtice Castenholz, A. B. (University of Indiana), in History and Political Science—

THESIS: The growth of socialism in Germany during the period of the anti-socialist law of 1878.

Henry Julius Peterson Grimsby, A. B. (St. Olaf College), in European History and English—

THESIS: The social life and customs of the average farmer during the reign of Queen Elizabeth.

John Fred Haussmann, A. B. (University of Michigan), in German Philology and German Literature—

THESIS: Der wortschatz in Wernhers des Gaertners Meier Helmbrecht. I. Vocabularium.

Perry Spenser Johnson, A. B. (Luther College), in Political Science and Economics—

THESIS: The legislation of the colony of New York.

Richard Frederick Scholz, A. B. (University of Wisconsin), in Latin, Greek, and History—

*THESIS: The tyrant in Greek thought with a critical discussion of Aristotle's theory of tyranny.

John Burroughs Stearns, A. B. (University of Wisconsin), in Greek and Latin—

*THESIS: The position of woman in Roman satire.

Master of Letters.

Horace Herbert Bass, B. L. (University of Wisconsin), in American History and European History—

THESIS: Adet's mission.

Maude Catharine Blodgett, B. L. (University of Wisconsin), in English Literature and German—

*THESIS: A comparison of Milton and Gray as elegists.

*Baccalaureate thesis accepted in lieu of Master's thesis.

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Mildred Alice Castle, B. L. (University of Wisconsin), in French, Spanish and Italian—

*THESIS: The evolution of literary criticism.

Mary Hazeltine Ela, B. L. (University of Wisconsin), in History and Latin—

THESIS: The international relations of the southwest Indians from 1793 to 1795.

Kate L. Hocking, B. L. (University of Wisconsin), in English and American History—

*THESIS: Spanish influence on American literature.

Solomon Huebner, B. L. (University of Wisconsin), in Economics and Political Science—

*THESIS: Inheritance taxation in the American commonwealths.

Henry Lorenzo Janes, B. L. (University of Wisconsin), in Political Science and History—

*THESIS: Land policy pursued by France in Algeria and Tunis.

Florence Josephine Ketchum, B. L. (University of Wisconsin), in English and Philosophy—

*THESIS: A study of the ballad in the later romantic poets.

Augusta Elizabeth Noelke, B. L. (University of Wisconsin), in German and English—

*THESIS: Das starke verbum in volksbuche vom Doctor Faust.

Louis John Paetow, B. L. (University of Wisconsin), in History and Latin—

*THESIS: The arts course at the French universities in the thirteenth and fourteenth centuries.

Rose Alice Pesta, B. L. (University of Wisconsin), in Mathematics and History—

*THESIS: The operator Δ in tangential co-ordinates.

Edgar Freeman Strong, B. L. (University of Wisconsin), in Economics and History—

THESIS: The legality of trusts and industrial combinations.

Master of Science.

William Ballantyne Anderson, B. S. (University of Wisconsin), in Physics and Physical Chemistry—

*THESIS: On the mounting of a concave grating and the study of the band spectrum of sodium vapor.

Charles Franklin Bowen, B. S. (Brigham Young College), in Geology, Mineralogy, and Physical Chemistry—

THESIS: Pleistocene geology of the Uinta Mountains.

*Baccalaureate thesis accepted in lieu of Master's thesis.

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Matilda Elizabeth Bruner, B. S. (Drake University), in Physical Chemistry and Geology—

THESIS: Electrical conductivity of solutions in amyl amine.

Edgar Burton Hutchins, Jr., M. S. (Ottawa University), in Inorganic Chemistry and Physical Chemistry—

THESIS: The pentavalence of bismuth.

Roswell Hill Johnson, B. S. (University of Chicago), in Zoology and Botany—

THESIS: The individuality and variation of the pyloric cæca of the centrarch fishes of southern Wisconsin.

Master of Philosophy.

William Carl Ruediger, Ph. B. (University of Wisconsin), in Philosophy, History, and Pedagogy—

*THESIS: The outgrowth of the sciences from philosophy.

Doctor of Philosophy.

Gustave Fernekes, B. S. (University of Wisconsin), in Chemistry—

THESIS: Action of sodium and potassium amalgams on various aqueous solutions.

William Dodge Frost, M. S. (University of Minnesota), in Bacteriology, Botany and Chemistry—

THESIS: An experimental study of the antagonism exhibited by certain saprophypic bacteria against the Bacillus typhosus.

Annie Maria Pitman, A. B. (University of Wisconsin), in Latin, Greek, and English.

THESIS: The treatment of nature in the poetry of the Roman Empire during the Augustan Age.

Elsbeth Veerhusen, A. B. (University of Wisconsin), in German Philology, English, and Norse—

THESIS: Das adjectiv in der syntax Notkers. I. Die psalmen.

HONORARY DEGREE.

Doctor of Laws.

Edward P. Allis, Jr. John Johnston.
William Morton Payne.

Honors in Special Studies.

Courtney Carlos Douglas, in Mechanical Engineering—

THESIS: The ratio of the amount of CO_2 present in the flue gases to the boiler efficiency.

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*Baccalaureate thesis accepted in lieu of Master's thesis.

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Harold Everett Eggers, in Physical Chemistry—
THESIS: On the dielectric constants of solvents and solutions.

Stuart Jamieson Fuller, in Commerce—
THESIS: The reorganization of railway corporations.

George Julius Heuer, in Vertebrate Anatomy—
THESIS: The pancreatic ducts in the cat.

Homer C. Hockett, in American History—
THESIS: The origin of the Jackson party.

Joseph Gerard Holty, in Chemistry—
THESIS: The reducing action of chromous chloride and the chromic selenites.

Emma Gertrude Jaeck, in German—
THESIS: Byron and Heine: a study of their treatment of nature.

George Addison Perham, in American History—
THESIS: British relations with Texas prior to its annexation by the United States.

Peter Verner Petersen, in Commerce—
THESIS: The wheat trade of the United States before 1850.

Adolph Pfund, in German—
THESIS: The relation of Edgar Allan Poe to August Wilhelm von Schlegel.

Arthur Joseph Quigley, in Mechanical Engineering—
THESIS: The ratio of the amount of CO_2 present in the flue gases to the boiler efficiency.

Charles Harry Stone, in Economics—
THESIS: The opinion of the English economists between 1820 and 1870 on factory legislation and labor combinations.

Norma Curtis Wood, in Latin—
THESIS: Freedmen and slaves in Latin satire.

Clarence Irving Zimmerman, in Electrical Engineering—
THESIS: The aluminum cell as an electrical condenser.

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SUMMARY OF GRADUATES.

		1903.
Number of first degrees granted, 1854—1903	5,080	353
Ancient Classical Course, 1854—1903	471	21
Modern Classical Course, 1876—1903	547	33
English Course, 1887—1903	458	44
Civic Historical Course, 1893—1903	383	40
General Science Course, 1866—1903	722	26
School of Commerce, 1902—1903	9	7
Philosophical Course, 1898—1903	135	39
Normal Course, 1865—1868	25	..
Civil Engineering Course, 1873—1903	181	15
Mechanical Engineering Course, 1876—1903	150	13
Electrical Engineering Course, 1892—1903	140	26
Applied Electrochemistry Course, 1903	3	3
Metallurgical Engineering Course, 1876—1896	16	..
General Engineering Course, 1901—1903	4	2
Law Course, 1869—1903	1,547	70
Pharmacy Courses, 1884—1903	227	11
Agricultural Course, 1878—1903	23	3
School of Music	41	6
Higher degrees on examination.		
Master of Arts, Letters, and Science, 1879—1903	219	25
Engineers, 1875—1903	58	..
Doctors of Philosophy, 1892—1903	57	4

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STUDENTS.

GRADUATES.

Fellows.

Barnard, David Luther, B. S., University of Wisconsin, ... 310 Bruen.
Gustave A. Kletzsch Fellowship in Bacteriology.

Boggess, Arthur Clinton, A. B., University of Illinois, ... 424 Frances.
Fellow in American History.

Brown, Oliver W., M. S., Indiana University, ... 430 Frances.
Honorary Fellow in Engineering.

Field, Arthur Sargent, A. B., Dartmouth College, ... 425 State.
Fellow in Economics.

Gannaway, John Walter, A. B., Iowa College, ... 202 Park.
Fellow in Political Science.

Haussmann, John Frederick, A. B., University of Michigan, ... 821 University Ave.
Fellow in German.

Ingersoll, Leonard Rose, B. S., Colorado College, ... 1102 W. Johnson.
Fellow in Physics.

Knight, Henry Seymour, A. B., Williams College, ... 309 Wisconsin Ave.
Fellow in Hellenistic Greek.

Kundert, Alfred Emil, B. S., University of Wisconsin, ... 152 W. Gorham.
Fellow in Pharmacy.

Magnusson, John Peter, A. B., Gustavus Adolphus College, ... 152 W. Gorham.
Fellow in Chemistry.

McClernan, Marie, A. M., University of Wisconsin, ... 407 W. Doty.
Honorary Fellow in Greek.

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McLenegan, Annie Susan, B. L., University of Wisconsin, ... 257 Langdon.
Fellow in English.

Myers, Albert Cook, M. L., Swarthmore College, ... 501 N. Henry.
Honorary Fellow in American History.

Moore, John Allen, A. M., University of Chicago, ... 310 Johnson Court.
Fellow in Latin.

Olive, Edgar William, Ph. D., Harvard, . 414 N. Henry.
Honorary Fellow in Botany.

Pesta, Rose Alice, B. L., University of Wisconsin, ... 11 E. Gorham.
Fellow in Mathematics.

Scholz, Richard Frederick, A. B., University of Wisconsin, ... 811 W. Dayton.
Fellow in European History.

Smiley, Charles Newton, A. M., Harvard University, ... 213 Park.
Fellow in Greek.

Swingle, Deane Bret, M. S., University of Wisconsin, ... 202 Park.
Fellow in Botany.

Scholars.

Anderson, William Ballantyne, B. S., University of Wisconsin, ... 230 W. Gilman.
Scholar in Physics.

Baldvin, Oliver Helgason, B. A., Toronto University, ... 433 Frances.
Scholar in English.

Boyle, James Ernest, A. M., Kansas University, ... 914 W. Dayton.
Penoyer Scholar in Economics.

Breslich, Arthur Louis, A. B., Berea College, ... 116 E. Mifflin.
Scholar in Hebrew and Hellenistic Greek.

Bruns, Friederich, A. B., Wartburg College, ... 623 E. Gorham.
Scholar in German Philology.

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Bump, Milan Ray, B. S., University of Wisconsin, ... 620 Langdon.
Scholar in Electrical Engineering.

Faber, Charlotte Alice, B. A., Wellesley College, ... 251 Langdon.
Scholar in Economics.

Hockett, Homer C., B. L., University of Wisconsin, ... 115 W. Johnson.
Scholar in American History.

Jones, Chester Lloyd, B. L., University of Wisconsin, ... 615 Lake.
Scholar in Political Science.

Pooley, William Vipond, A. B., University of Illinois, ... 223 W. Gilman.
Penoyer Scholar in Economics.

Sears, Rolla Gilbert, B. L., Christian University and Springfield College, . . 152 W. Gorham.
Scholar in Hellenistic Greek.

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Resident Graduates.

Adams, Philip, A. B., Harvard, . . . *Cambridge, Mass.*
English.

Allen, Charles Elmer, B. S., University of Wisconsin, ... *Madison.*
Plant Physiology, Plant Morphology, Zoology.

Allen, Florence Eliza, M. L., University of Wisconsin, ... *Madison.*
Mathematics.

Anderson, Lewis Albert, B. L., University of Wisconsin, ... *Mt. Horeb.*
Political Science, Economics.

Ball, Sydney Hobart, A. B., University of Wisconsin, ... *Oak Park, Ill.*
Geology, Mineralogy, Petrology, Chemistry.

Barnett, James Duff, A. B., College of Emporia, ... *Madison.*
Political Science, History, Economics.

Benner, Raymond Calvin, B. S., University of Minnesota, ... *Sauk Center Minn.*
Chemistry, Geology.

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Bishop, Edwin Sherwood, B. L., University of Wisconsin, ... *Somers.*
Physics, Chemistry, Mathematics.

Bleyer, Willard Grosvenor, M. L., University of Wisconsin, ... *Madison.*
English Philology, English Literature, Germanic Philology.

Brandel, Irwin Walter, Ph. G., M. S., University of Wisconsin, ... *Milwaukee.*
Pharmacy, Chemistry, Mathematics.

Briggs, George Wesley, B. L., University of Wisconsin, ... *Trempeleau.*
Hellenistic Greek.

Brown, John Clarence, B. S., Ag., M. S., Iowa State College, ... *Dexter, Iowa.*
Agr. Chemistry, Bacteriology, Agr. Physics.

Christman, Arthur Henry, B. S., University of Wisconsin, ... *Menomonee Falls.*
Botany, Horticulture.

Chynoweth, Edna Ruth, B. L., M. L., University of Wisconsin, ... *Madison.*
Political Science.

Crathorne, Arthur Robert, B. S., University of Illinois, ... *Champaign, Ill.*
Mathematics.

Cross, Cleaveland Roselle, A. B., Oberlin College, ... *Eugene, Ore.*
Political Science, American History, Economics.

Crothers, Hayes B., A. B., Monmouth College, ... *Sparta, Ill.*
American History.

Dean, Alletta Friscone, Ph. B., University of Wisconsin, ... *Madison.*
Biology.

Denniston, Rollin Henry, B. S., University of Wisconsin, ... *Burlington.*
Plant Physiology, Mycology, Zoology.

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Dickinson, Thomas Herbert, A. M., Columbia University, ... *Madison.*
English Literature, Philology, Philosophy.

Ellis, Robert Walpole, B. S., University of South Dakota, ... *Endeavor.*
Geology.

Filbey, Edward Joseph, Ph. B., Lawrence University, A. B., University of Wisconsin, ... *Appleton.*
Latin, Greek.

Goodnight, Scott Holland, A. M., Eureka (Ill.) College, ... *Madison.*
German Literature, German Philology, French Literature.

Haase, Alvin, B. S., C. E., University of Wisconsin, ... *Milwaukee.*
Civil Engineering.

Hall, Edward Bennington, B. S., Drury College, ... *Springfield, Mo.*
Geology, Chemistry.

Hancock, Eugene Thomas, B. S., University of Wisconsin, ... *Madison.*
Geology, Chemistry.

Hastings, Edwin George, M. Sc., University of Wisconsin, ... *Madison.*
Agr. Bacteriology, Dairy Chemistry, Soil Physics.

Hockett, Amy Francisco, B. L., Earlham College, ... ***Madison.***
Economics.

Holden, Roy Jay, B. L., University of Wisconsin, ... *Sheboygan Falls.*
Geology, Chemistry, Engineering.

Holman, Herbert Paul, A. B., Indiana University, ... *Vincennes, Ind.*
Inorganic Chemistry, Physical Chemistry, Electrochemistry.

Holty, Joseph Gerard, B. S., University of Wisconsin, ... *Madison.*
Chemistry, Mineralogy.

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Humphrey, May Martin, A. B., University of Wisconsin, ... *Bloomington.*
Latin.

Hutchins, Edgar Burton, Jr., M. S., University of Wisconsin, ... *Madison.*
Inorganic Chemistry, Mineralogy, Organic Chemistry.

Ingersoll, Leonard Rose, B. S., Colorado College, ... *Denver, Col.*
Physics, Mathematics.

Inouya, Navjivo, Osaka College of Pharmacy, ... *Harmi, Japan.*
Pharmacy.

Jacobsen, Karl Theodor, A. B., Luther College, ... *Stoughton.*
Greek, Latin, History, Norse.

Jenkins, Sara Davis, Ph. B., University of Wisconsin, ... *Madison.*
English.

Jones, Mary Pettibone, A. B., Rockford College, ... *Ft. Atkinson.*
American History, English.

Kamiyama, Bentura, Chinzli Gakhwan College, ... *Higo, Japan.*
Economics, Sociology, Political Science.

Keachie, George Robertson, B. S., University of Wisconsin, ... *Cedar Rapids, Iowa.*
Chemistry, Geology.

King, Anna Belle B. L., University of Wisconsin, ... *Madison.*
English, History.

King, Bessie Susan, B. L. University of Wisconsin, ... *Neillsville.*
Latin, Greek.

Kinugawa, Taro, Ph. B., Hiram College, A. B., Keio College, ... *Nagoya, Japan.*
Political Science, Economics, History.

Kircher, Henry William, Ph. B., University of Wisconsin, ... *Misha Mokwa.*
Physics, Mathematics, Chemistry.

Lemke, Charles Frederick, A. B., University of Wisconsin, ... *Wausau.*
European History. American History.

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Lorenz, Max Otto, A. B., University of Iowa, ... *Iowa City, Iowa.*
Economics, Political Science, Sociology.

Lounsbury, Benjamin Franklin, B. L., University of Wisconsin, ... *Madison.*
Anatomy, Chemistry, Embryology, Bacteriology, Histology.

McKinney, Frank C., A. M., University of Ohio, ... *Columbus, Ohio.*
English Literature.

McNeil, Anna Holmquist, Ph. B., University of Wisconsin, ... *Janesville.*
English Literature, Pedagogy.

Macnish, Ralph Benjamin, B. L., University of Wisconsin, ... *Berlin.*
French Literature, Old French, Italian, Spanish Literature.

Marquette, William George, B. S., University of Wisconsin, ... *Watertown.*
Botany, Zoology.

Mason, Agnes May, Ph. B., University of Michigan, ... *Streator, Ill.*
German.

Morse, Anson Ely, B. A., M. A., Princeton University, ... *Amherst, Mass.*
American History, European History.

Nichols, Susie Percival, B. S., Cornell University, ... *Clinton, N. Y.*
Botany.

Norman, George Miller, B. S., Pennsylvania State College . . . . . *Bloomsburg, Pa.*
Electrochemistry, Applied Electricity and Magnetism, Applied Electrochemistry.

Olson, George Alfred, B. Sc., Agr., University, ... *Chicago, Ill.*
Agr. Chemistry, Agr. Physics.

Otwell, Allen Mead M. S., University of Illinois, ... *Plainview, Ill.*
Alternating Currents.

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Persons, Warren Milton, B. S., University of Wisconsin, ... *Madison.*
Mathematics, Economics.

Pfund, Adolph, A. B., University of Wisconsin, ... *Madison.*
German.

Poage, George Coleman, B. L., University of Wisconsin, ... *La Crosse.*
History, Political Science.

Putnam, James William, A. M., Cornell University, ... *Jacksonville, Ill.*
Economics.

Redmond, William, A. B., Indiana University, ... *Ridgeville, Ind.*
American History, Economics, Political Science.

Reed, George Matthew, A. B., Geneva College, ... *Beaver Falls, Pa.*
Botany, Zoology.

Robb, Francis Green, B. S., Parsons College, ... *Russell, Iowa.*
Botany, Zoology, Bacteriology.

Schultz, Alfred Reginald, B. S., University of Wisconsin, ... *Tomah.*
Geology, Chemistry, Mineralogy.

Sherman, Helen, B. S., in Ph., University of Wisconsin, ... *Milwaukee.*
Botany.

Shinn, Frederick LaFayette, A. M., Indiana University, ... *Montpelier, Ind.*
Phys. Chemistry, Org. Chemistry, Mathematics.

Smythe, Herman Augustine, Jr., B. S., University of Wisconsin, ... *Madison.*
History, Corporation Finance, Commercial Law.

Spalding, William, B. S., E. E., University of Wisconsin, ... *Oshkosh.*
Advanced Alternating Currents, Railway Engineering.

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Starr, Harry Linn, A. B., A. M., Wabash College, ... *Ridge Farm, Ill.*
English.

Stiles, Clara Wright, B. A., Beloit College, *Beloit.*
Greek, Latin, German.

Stoner, Mary Gertrude Hemenway, B. L., University of Wisconsin, ... *Madison.*
French, Spanish, Italian.

Terry, Earle Meldin, A. B., University of Michigan, ... *Battle Creek Mich.*
Physics, Mathematics.

Thuerer, Edward Walter, B. L., University of Wisconsin, ... *Baraboo.*
Anatomy, Histology, Chemistry.

Toan, Ernest George, B. A., Carleton College, ... *Rochester, Minn.*
Physics,

Trump, Rodger Murphy, B. S., University of Wisconsin, ... *Milwaukee.*
Economics.

Tuthill, James Edward, M. A., University of Missouri, ... *Columbia University.*
European History.

Vorheis, Charles Taylor, B. S., Iowa Wesleyan University, ... *Mt. Pleasant, Iowa.*
Zoology, Botany.

Watts, Oliver Paterson, A. B., Bowdoin College, ... *Waltham, Mass.*
Electrochemistry, Phys. Chemistry, Electromagnetism.

Way, Royal Brunson, Ph. M., University of Michigan, ... *Saginaw, Mich.*
American History, European History, Political Science.

Wegemann, Carroll Harvey, B. S., University of Wisconsin, ... *Lake Mills.*
Geology.

Wolff, Henry Charles, M. S., University of Wisconsin, ... *Madison.*
Mathematics, Physics, Geology.

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Woll, Fritz William, M. S., University of Wisconsin, ... *Madison.*
Agricultural Chemistry, Physiological Chemistry, Dairy Husbandry.

Zenki, Oishi, Kumamoto College, . . . *Kumamoto, Japan.*
Economics, Political Science.

Ziepprecht, Carl William, Ph. G., University of Wisconsin, ... *Madison.*
Bacteriology, Chemistry.

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UNDERGRADUATES.

College of Letters and Science.

SENIOR CLASS.

Abbott, Allen Crossman,	*Oshkosh.*
Adams, Elma Lucille,	*Milwaukee.*
Anderson, George Finlay,	*Maquoketa, Iowa.*
Andrews, John Bertram,	*South Wayne.*
Askew, Amelia Alice,	*Madison.*
Augustine, Elizabeth Barbara,	*Racine.*
Beatty, Carlotta McCutcheon,	*Madison.*
Bernard, Ransom Drips,	*Madison.*
Beule, Ervin John,	*Fox Lake.*
Blackman, Loren Dwight,	*Neenah.*
Blake, Emmons Reed,	*Port Washington.*
Blake, James Bronson,	*Winona, Minn.*
Bradley, Mabel Josephine,	*Madison.*
Breslauer, Arthur,	*Milwaukee.*
Brown, John Sears,	*Sparta.*
Brown, Ralph Dexter,	*Rhinelander.*
Buck, Solon Justus,	*Berlin.*
Bush, William Paul,	*Sparta.*
Carrico, Fred Kilburn,	*Rockford, Ill.*
Carroll, William Peter,	*Wales.*
Case, Lucie Nell,	*Milwaukee.*
Case, Matilda Helen,	*Heart Prairie.*
Christman, Arthur Henry,	*Menomonee Falls.*
Clement, Peter Ernest,	*Scandinavia.*
Coerper, Elsie Luella,	*Hartford,*
Congdon, Mirah,	*La Crosse.*

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Conry, Maud Evlynn,	*Madison.*
Cook, Nettie May,	*Madison.*
Cooper, Elva,	*Milwaukee.*
Cowell, William Albert,	*Kewaunee.*
Cunneen, William Aloysius,	*Mazomanie.*
Derge, Herman Ferdinand,	*Eau Claire.*
Dodge, Florence Adele,	*Windsor.*
Donly, Julia Anna,	*Kenosha.*
DuFour, Laura Edna,	*Racine.*
Eaton, Frank Julius,	*Cudahy.*
Egan, Mary Amelia,	*Madison.*
Eggum, Ole,	*Mt. Horeb.*
Ellis, Ralph Burchard,	*Madison.*
Epstein, Charlotte Wilmina,	*Portage.*
Erickson, Oscar Gustav,	*Canby, Minn.*
Etter, Nellie Alpharetta,	*Monroe.*
Evans, Lilian Helen,	*Spring Green.*
Evans, Magdalen,	*Madison.*
Evans, Mary Margaret,	*Spring Green.*
Ferguson, Donald Nivison,	*Milwaukee.*
Findeison, Henrietta Mae,	*Chicago, Ill.*
Gath, Minna Evangeline,	*Madison.*
Gillen, Mary Alice	*Racine.*
Goddard, Mabel,	*Freeport, Ill.*
Gove, George Ross,	*Madison.*
Green, Edward Emerson,	*Basco.*
Green, Frank Berdette,	*Evansville.*
Grove, William Edward Henry,	*Madison.*
Groves, Regina Eunice,	*Madison.*
Haan, Frederika Barbara,	*Renville, Minn.*
Hagopian, Hovhan,	*Madison.*
Halbach, Norma Catherine,	*Marinette.*
Hale, Berndt Severin,	*Waupaca.*
Hall, Kathryn,	*Watertown.*
Hall, Margaret Spencer,	*Madison.*
Harvey, Harriet Anna,	*Racine.*
Harvey, Isabel,	*Lake Mills.*
Haseltine, Winfred David,	*Mazomanie.*
Hatch, Bernice Clara,	*Sturgeon Bay.*
Hayden, John Gilbert,	*Milwaukee.*
Hendrickson, Amy Louise,	*Madison.*
Hoffman, Albert John,	*Brookfield.*

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Howley, John Edward,	*Madison.*
Hudson, Farnham Allen.	*Waukegan, Ill.*
Humphreys, George Landreth,	*Rewey.*
Hunt, Fred Ralph,	*Sioux City, Iowa.*
Huth, Carl Frederick,	*Milwaukee.*
Hutton, James,	*Waukesha.*
Inbusch, Fred Clarence,	*Milwaukee.*
Jackman, Margaret Clarice,	*Janesville.*
James, Frances Sophia Courtenay,	*Eau Claire.*
James, James Charles,	*Aurora, Ill.*
Jebens, Henry Hans,	*Madison.*
Johnston, John Thor,	*Milwaukee.*
Jones, Ida Isabelle,	*Pasadena, Cal.*
Juneau, William Joseph,	*West Allis.*
Keating, Grace Maye,	*Elgin, Ill.*
Kelling, Max John,	*Milwaukee.*
Kelsey, William Thomas,	*Baraboo.*
Kemmerer, George Irving,	*Clinton Junction.*
King, Elsie,	*Neillsville.*
Kinne, Blanche Marie,	*Elkhorn.*
Kuhns, Hattie,	*Madison.*
Kunerth, William	*La Crosse.*
Lachmund, Bruno,	*Sauk City.*
LaFollette, Fola,	*Madison.*
Lauderdale, Clara Mary,	*Elkhorn.*
Law, David Sydney,	*La Crosse.*
Lewis, Arthur Warne ,	*Madison.*
Liver, John Irving,	*Hartford.*
Lord, John Solon,	*Dixon, Ill.*
Luebke, William Ferdinand,	*Horicon.*
Lyman, Charles Adelbert,	*Burke.*
Madsen, Carl Theophilus,	*Grand Rapids.*
Manchester, Frederick Alexander,	*Madison.*
Marquette, George John,	*Watertown.*
Marquissee, Victor Grant,	*Altoona.*
Mashek, Anna Magdalene,	*La Crosse.*
Mason, Harriet,	*Fond du Lac.*
Mattke, Edward Gustav,	*Baraboo.*
McComb, Earl Vinten,	*Brillion.*
McCormick, Bartie Eldred,	*Waterloo.*
McEldowney, William Franklin,	*Chicago Heights, Ill.*
Milbrath, David Gallus,	*Milwaukee.*

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Miller, Marie Grace,	*Madison.*
Miller, Nelle,	*Monroe.*
Miner, Ruth Pauline,	*Madison.*
Moe, Maurice Winter,	*Milwaukee.*
Moffatt, Florence Susannah,	*Davenport, Iowa.*
Mortenson, Thorina Olena,	*Racine.*
Mutchler, Kate,	*Madison.*
Nalty, Josephine Agnes,	*Monroe.*
Nelson, Mary Lillian,	*La Crosse.*
Nichols, William Crane,	*Fargo, N. D.*
Ogilvie, Lottie May,	*Verona.*
Olmsted, Sophia Helen,	*Boone, Iowa.*
Paddock, Carrie Rosalind,	*Madison.*
Paust, Benjamin Alexander,	*Milwaukee.*
Pease, Clifford Coleman,	*Madison.*
Pengra, Delia Idell,	*Madison.*
Phillips, Ruth Mary,	*Madison.*
Pomeroy, Harry Ralph,	*Edgerton.*
Pray, Kenneth Louis Moffatt,	*Stevens Point.*
Redfield, Ethel Ione,	*Racine.*
Reineking, Walter Clarence,	*Milwaukee.*
Rice, Claudia Bee,	*Davenport, Iowa.*
Rickeman, Hugo Albert,	*Racine.*
Rider, Melinda Catherine,	*Madison.*
Robinson, Amy Anna,	*Wyanet, Ill.*
Robinson, Mae Josephine,	*Sparta.*
Sands, Mary Christena,	*Milwaukee.*
Sargent, Frank Byron,	*Seymour.*
Schneider, Daniel Leonard,	*Garner, Iowa.*
Schreiber, William Earle	*Madison.*
Shattuck, Georgia Mabel,	*Medford.*
Shockley, Dale Curry,	*Lamont.*
Silverthorn, James Chisholm,	*Wausau.*
Stark, Henry Walter,	*Milwaukee.*
Steinfort, Meta Mary,	*Watertown.*
Stevens, Mary Holmes,	*Rochester, N. Y.*
Stevenson, Robert George,	*East Marinette.*
Stockman, Ruth Chafin,	*Mason City, Iowa.*
Smythe, Edwin Willis,	*Madison.*
Streeter, Adah Otilia,	*La Crosse.*
Sutherland, Sarah Sayre,	*Janesville.*
Sweet, Lucien Samuel,	*Madison.*

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Tanner, Kenneth Boyd,	*So. Kaukauna.*
Taylor, Charles Arthur,	*Barron.*
Tibbals, Charles Austin, Jr.,	*Madison.*
Tompkins, Lillian Rosalie,	*Madison.*
Tompkins, Pearl Esther,	*Madison.*
Turner, Frederick James,	*Waupun.*
Turner, Laura Jane,	*Columbus.*
Urban, William	*Plainfield.*
Urner, Charles Anderson,	*New York City, N. Y.*
Warner, Julius Herbert,	*Windsor.*
Welsh, Ada Mary,	*Madison.*
Werder, Hudson Bernard,	*Charles City, Iowa.*
Wheelwright Orville William,	*Belleville.*
White, May Langdon,	*Boston, Mass.*
Whitman, Roscoe,	*Dodgeville.*
Whittier, Martha Taylor,	*Madison.*
Wing, Elizabeth,	*La Crosse.*
Winslow, Horatio Gates,	*Madison.*
Wooledge, Gaius Sibley,	*Antigo.*
Worthing, Archie Garfield,	*Oakfield.*
Zinn, Edna Bertha	*East Troy.*

Course in Commerce.

Bommerschein, John Baptist, Jr.	*Milwaukee.*
Chynoweth, Herbert Edgar,	*Madison.*
Dahle, Isaac James,	*Mt. Horeb.*
Derge, Julius Ferdinand,	*Eau Claire.*
Edwards, Ernest Albert,	*Ashland.*
Fox, Morris Fuller,	*Madison.*
Hamilton, Elmer William,	*Arena.*
Hinn, Albert George,	*Fennimore.*
Jackson, Marshall Hubbard,	*Oak Park, Ill.*
Landt, Ernest Wilber,	*Milwaukee.*
Meisnest, Charles William,	*Branch.*
Osthelder, Edwin Clark,	*Sheboygan.*
Parks, Lewis Woodworth,	*Watertown.*
Saucerman, Charles Harold,	*Winslow, Ill.*
Schedler, Paul Arthur,	*Oconto.*
Sharp, Robert Nicholson,	*Chicago, Ill.*
Shiels, Henry Elliott,	*Madison.*
Stephenson, Eugene James,	*Albany.*

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Taylor, George Edwards,	*La Crosse.*
Thiede, Arthur Emil,	*Columbus.*
Usher, Robert James,	*South Wayne.*

Course in Philosophy.

Ashman, Margaret Eliza,	*Waupaca.*
Bradley, Carolyn Hale,	*Sheboygan.*
Buck, Ethelwyn Berenice,	*Platteville.*
Burdick, Lawrence Wylie,	*Albion.*
Carey, Katherine Lee,	*Bloomington.*
Comstock, Bessie,	*Milwaukee.*
Davis, William Lloyd,	*Mauston.*
Dunbar, Frank Winsor,	*Elkhorn.*
Hacker, Henry Christian,	*Wilson, Minn.*
Hainke, Hulda Bertha,	*Milwaukee.*
Hale, Winifred Emma,	*Waukesha.*
Love, Mattie H.,	*Waukesha.*
Mattson, Gustaf Adolph,	*Lund.*
Merrick, Jessie Bee,	*Madison.*
Neuhaus, Alma Josephine,	*Burlington.*
Nichols, Roy Theodore,	*River Falls.*
Patten, Elizabeth May,	*DeKalb, Ill.*
Pease, Peter Laurence,	*Cumberland.*
Pratt, Mabel Deborah,	*Milwaukee.*
Royce, Asa Marshfield,	*Oconto.*
Schofield, Harvey A.,	*Augusta.*
Steenis, John William,	*Hingham.*
Works, George Alan,	*Augusta.*

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JUNIOR CLASS.

Abaly, Elizabeth,	*Madison.*
Abbott, Chauncy, Jr.,	*Schuyler, Neb.*
Allen, Iva Clair,	*Madison.*
Allen, Ruth Florence,	*Sturgeon Bay.*
Arvold, Alfred Gilmeiden,	*Whitewater.*
Baker, Frances May,	*Madison.*
Baker, John Franklin,	*Alma Center.*
Ballantyne, Edith Virtue,	*Bloomington.*
Barber, George Stanley,	*Waukesha.*
Barney, Godfrey Waldo,	*Mauston.*
Barry, John Sumner,	*Phillips.*

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Bartelt, Arthur Herman,	*Ft. Atkinson.*
Bartlett, Edwin Ball,	*Milwaukee.*
Beaver, Grace May,	*Baraboo.*
Bell, Marion Caroline,	*Milwaukee.*
Berg, Lily May,	*Madison.*
Bernard, Anna Katherine,	*Galena, Ill.*
Binnie, Helen Archibald,	*Poynette.*
Bird, Wayne Doty,	*Madison.*
Boaler, Richard Allan,	*Green Bay.*
Bogue, David,	*Poynette.*
Bolte, Rudolph Emil,	*Davenport, Iowa.*
Brahany, Kathryn Isabel,	*Madison.*
Broenniman, Leonard Edwin,	*Watertown.*
Brush, Jesse Platt,	*Stewartville, Minn.*
Buehler, Elizabeth Catherine,	*Monroe.*
Chinnock, Mabel Amy,	*River Falls.*
Christensen, Vera Marie,	*Baldwin.*
Clark, Arthur John,	*Janesville.*
Cline, Genevieve Elida,	*Hudson.*
Coffin, Margaret Ellen,	*Eau Claire.*
Cole, Julia Ann,	*Milwaukee.*
Concklin, Esther Rachel,	*East Troy.*
Confer, Francis Marion,	*Madison.*
Cook, Eudora Idalia,	*Madison.*
Cook, Hazel Margaret,	*Chetek.*
Cook, Henry Allen,	*Madison.*
Coonen, John Edgar,	*South Kaukauna.*
Cooper, Cornelia Lida,	*Madison.*
Corlett, Ralph,	*Harvard, Ill.*
Cowles, Herbert Van,	*Madison.*
Crane, Guy Walter,	*Milwaukee.*
Crawford, David Anderson,	*Madison.*
Creutz, Lester Raymond,	*Moline, Ill.*
Cross, Ira Brown,	*Madison.*
Daniells, John Eckley,	*Madison.*
Darling, Walter Gregory,	*Milwaukee.*
Dietz, Arthur,	*Mayville.*
Elliott, Isaac,	*Menomonie.*
Ellis, Grace Victoria,	*Bristol.*
Evert, Karl,	*Madison.*
Faller, Phœbe Maude,	*Madison.*
Faust, Howard Harry,	*Merrill.*

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Fisher, Arthur Oscar,	*Baraboo.*
Foley, Elizabeth Viola,	*Wauwatosa.*
Foster, Albert William,	*Milwaukee.*
Fridd, Blanche,	*Valley City, N. D.*
Fryette, Leora Blanche,	*Madison.*
Fuller, Litta Maurie,	*Plymouth.*
Geisse, Harold Llewellyn,	*Chilton.*
Gratiot, Charles Gross,	*Shullsburg.*
Green, Alice Evangeline,	*Fond du Lac.*
Griggs, Victor Rockwell,	*Madison.*
Grinde, Hilda Christine,	*Madison.*
Griswold, Willard Seward,	*Waukesha.*
Haertel, Lillian Emilie,	*Madison.*
Hannahs, Charlotte Eva,	*Kenosha.*
Hansen, Dagmar,	*Racine.*
Harder, Edmund Cecil,	*Milwaukee.*
Harrison, Edna Lucretia,	*Madison.*
Harvey, Katherine Mary,	*Madison.*
Haskins, Lieu Pyrrhas,	*Madison.*
Hean, Clarence Scott,	*Madison.*
Helmholz, Anna Augusta,	*Madison.*
Herdegen, Robert Townsend,	*Milwaukee.*
Homberger, Alfred Wilhelm,	*Sauk City.*
Huebner, Grover Gerhard,	*Manitowoc.*
Jahr, Marvin Edward,	*Neillsville.*
Jamieson, Gerald William,	*Shullsburg.*
Johnson, Edith,	*Kokomo, Ind.*
Johnson, Martha Frances,	*Kokomo, Ind.*
Johnson, Una Ione,	*Madison.*
Johnstone, Albert Henry,	*Merrimac.*
Jones, Gwendolyn Gaynor,	*Madison.*
Jones, Marion Burr,	*Madison.*
Jordan, Edward Stanlaw,	*Madison.*
Katz, Frank James,	*Milwaukee.*
Kelley, Chase William,	*Madison.*
Kemler, Clara,	*Platteville.*
Klahr, Florence Marie,	*Horicon.*
Krape, William Garman,	*Freeport, Ill.*
Krause, Anna Adeline,	*Sauk City.*
Lea, Clara Alice,	*Madison.*
Leonard, Henry Kendall,	*Bruce.*

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Lorch, Augusta Christine,	*Madison.*
Lyon, Ruth Erema,	*Madison.*
MacGraw, William Don,	*Chippewa Falls.*
Mahon, Thomas Joseph,	*Milwaukee.*
Martin, Grace Johnston,	*Waupun.*
McCulloch, Sadie,	*Madison.*
Middleton, Eliza Evelyn,	*Oak Park, Ill.*
Miltenberger, Robert Edgar,	*Randolph.*
McGillivray, William,	*Black River Falls.*
McGoorty, Anne,	*Chicago, Ill.*
Moffatt, John James,	*Davenport, Iowa.*
Moore, Ethel Edna,	*Merrillan.*
Moorhouse, Amy Louise,	*Lake Geneva.*
Morse, Jessie Marietta,	*Madison.*
Morse, Sarah Duncan,	*Amherst, Mass.*
Neilson, George Whittier,	*Milwaukee.*
Nelson, Tillie Eliza,	*Madison.*
Norsman, Cora Miriam,	*Madison.*
Olbrich, Emil,	*Harvard, Ill.*
Parker, Madge Mary,	*Mason City, Iowa.*
Parsons, Forest Lee,	*Berlin.*
Pengra, Marshall Hylon,	*Madison.*
Persons, Archie Lee,	*Arkansaw.*
Pfund, Carl Frederick,	*Madison.*
Phelan, Ruth Lincoln,	*Dickinson, N. D.*
Pickert, Jared Curtis,	*Berlin.*
Pietzsch, Harriet Shumway,	*Baraboo.*
Pritchard, George Scott,	*Aurora, Ill.*
Purcell, John Daniel,	*Waterloo.*
Rathjen, Edwin Frederick,	*Milwaukee.*
Reed, Lutie Northey,	*Elkhorn.*
Reiss, Wallace,	*Milwaukee.*
Rhoades, Ellen May,	*Fond du Lac.*
Riess, Minnie Margaret,	*Sheboygan.*
Rogers, Faye Valerie,	*Clinton.*
Runge, Lulu Lillian,	*Madison.*
Saemann, Mabelle Oletta,	*Plymouth.*
Salter, Richard Grover,	*Colby.*
Schmidt, Richard August,	*West Depere.*
Schmitt, Gustav George,	*Muscoda.*
Schreiber, Cecil Everett,	*Madison.*
Schmoyer, Winnie Victoria,	*Menomonie Falls.*

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Scott, Marian Julia,	*Poynette.*
Sell, Martha Erbach,	*New Holstein.*
Shattuck, Fredrica Van Fries,	*Medford.*
Shea, Eugenie Elinor,	*Ashland.*
Shunk, Oral Jessie,	*Davenport, Iowa.*
Stephens, Jean Murray,	*Madison.*
Stiles, Nestor Luverne,	*Cherokee, Iowa.*
Stott, Florence Daisy,	*Winona, Minn.*
Strehlow, Ida Elizabeth,	*Ft. Atkinson.*
Strong, Ethel May,	*Aurora, Ill.*
Swenson, Mary Waddington,	*Madison.*
Taylor, Lillian Elizabeth,	*Madison.*
Truckenbrodt, Lina,	*Sauk City.*
True, Eunice Miriam,	*Baraboo.*
Urquhart, Marion Estella,	*Medford.*
Vea, Elleda Johnson,	*Stoughton.*
Venus, Helen Marie,	*Shawano.*
Wagner, Rose May,	*Menasha.*
Waite, Dawn,	*Belvidere, Ill.*
Walsh, Agnes Louise,	*Milwaukee.*
Wells, Earl Harold,	*Manawa.*
Wells, Grace,	*Aurora, Ill.*
Welton, Chauncey Rex,	*Madison.*
Weniger, Willibald,	*Milwaukee.*
White, Herford,	*Delafield.*
Wichmann, Hugo John,	*New Holstein.*
Wilson, Leta May,	*Boscobel.*
Woock, Grace Genevieve,	*Baraboo.*

Course in Commerce.

Braley, Archie Berton,	*Madison.*
Brownell, George Holmer,	*Janesville.*
Carey, John Greer,	*Bloomington.*
Clifford, John Adams,	*Madison.*
Cole, Edgar George,	*Burnett Junction.*
Cook, Leo Marshall,	*Madison.*
Crocker, Frank Albert,	*Neillsville.*
Dean, Albert Briggs,	*Madison.*
Dudgeon, Richard Cone,	*Madison.*
Feldkamp, Bernard Eilart,	*Danville, Ill.*
Gilkey, George Leland,	*Oshkosh.*
Hayes, Joseph Dennis,	*Janesville.*

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Hibbard, Darrell Osmer,	*Racine.*
Houghton, Howard Warren,	*Atlanta, Ga.*
Kennedy, James Eugene,	*Madison.*
Mills, Clifford Wilde,	*Denver, Col.*
Neckerman, Reuben Julius,	*Madison.*
Olmsted, Lewis William,	*Boone, Iowa.*
Playter, James Andrew ,	*Eau Claire.*
Schlytter, Henry Richard,	*Wittenberg.*
Schriber, Rufus Kellogg,	*Oshkosh.*
Seidenglanz, Emil Telesfore,	*Kewaunee.*
Turner, Louis Howard,	*Mondovi.*
Wheelock, Harry Ellsworth,	*South Bend, Ind.*
Young, Edwin George,	*Beaver Dam.*

Course in Philosophy.

Adley, LaFayette Roswell,	*Maine, Minn.*
Allen, Daisy May,	*Allenville.*
ApRoberts, Elizabcth,	*River Falls.*
Baker, John Earl,	*Eagle.*
Bemis, Florence Irene,	*Oshkosh.*
Bronsky, Amy Angela,	*Chippewa Falls.*
Burnett, Eleanor Louise,	*River Falls.*
Carlsen, Alvin Louis,	*Blanchardville.*
Coggeshall, Minnie Juliet,	*River Falls.*
Colburn, Willis Paul,	*Cassville.*
Comstock, Effie,	*Milwaukee.*
Day, Abbie Louise,	*Madison.*
Eaton, Genevieve May,	*Superior.*
Ekern, Helga Maria,	*Madison.*
Erickson, Edward,	*Edenburg, N. D.*
FitzGerald, Helen Elizabeth,	*Oconomowoc.*
Gallagher, Bernard John,	*Oconto Falls.*
Grindell, John LeRoy,	*Platteville.*
Hake, Walter Scott,	*Jefferson.*
Hayes, Maude,	*Oconomowoc.*
Haseltine, Ray Carlton,	*Black Earth.*
Hughes, Harold Dalrymple,	*Merrill.*
Lerom, Bertha,	*Buxton, N. D.*
Lerom, Hattie Lucene,	*Buxton, N. D.*
MacArthur, Mary,	*Superior.*
Milne, William,	*Elroy.*
Moulton, Louis Henry,	*Oshkosh.*

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Norgord, Christian Percival,	*Bangor.*
Rawson, John Lupton,	*Big Patch.*
Rounswell, Bessie Lucy,	*River Falls.*
Sabin, Lillian,	*Milwaukee.*
Salter, Hortense May,	*Colby.*
Steil, William Nicholas,	*Platteville.*
Stivers, Samuel Antes,	*Madison.*
Sutton, Margaret Eliza,	*Oshkosh.*
Upham, Emily Woods,	*Whitewater.*
Vognild, Selma Marie,	*Chicago, Ill.*
Wartinbee, Francis Donald, Jr.,	*La Crosse.*
Young, Agnes Lydia,	*Wausau.*
Zeidler, Richard,	*Madison.*
Zoerb, Albert Jerome,	*Algoma.*
Zuppke, Robert Charles,	*Milwaukee.*

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SOPHOMORE CLASS.

Adams, Bessie Eliza,	*Madison.*
Allen, Henry Coburn,	*Indianapolis, Ind.*
Allen, Josephine Holcomb,	*Lake Geneva.*
Ames, Ada Dell,	*Eau Galle.*
Anderson, Selina Elizabeth,	*Racine.*
Anderson, William Alfred,	*Madison.*
Apple, Harry Aubrey,	*Milwaukee.*
Arnold, Willard Henry,	*Sharon.*
Atwood, Walter Myron,	*Madison.*
Baas, Alexius Henry,	*Madison.*
Bagley, Zillah Julia,	*Madison.*
Baker, Eva Jane,	*Mazomanie.*
Baker, John Sydney,	*Osseo.*
Barker, Charles Perley,	*Chippewa Falls.*
Berg, Jettie Emerle,	*Belvidere, Ill.*
Best, Louis Engelhardt,	*Milwaukee.*
Binnie, Nora Isabelle,	*Poynette.*
Birge, Anna Grant,	*Madison.*
Bishop, Charles Clyde,	*Dodgeville.*
Bissell, Cora Ethel,	*Madison.*
Blanchard, George Washington,	*Colby.*
Bostedo, Alfred Gardner,	*River Forest, Ill.*
Brey, Peter Francis,	*Algoma.*
Bridgman, Louis William,	*Madison.*

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Brindley, William Arthur,	*Boscobel.*
Buchanan, Iva Luella,	*Rio.*
Burgess, Ida Martha,	*Sharon.*
Burnham, Marguerite Eleanor,	*Madison.*
Campbell, Robert,	*Gurnee, Ill.*
*Canfield, Herman,	*Sparta.*
Case, Florence Dombey,	*West Allis.*
Cass, Lulu Edith,	*Madison.*
Chadwick, Howard William,	*Monroe.*
Churchill, Charles Lloyd,	*Waupaca.*
Cohen, Ruth Josephine,	*Sioux City, Iowa.*
Combacher, Leon Clinton,	*Osceola.*
Corse, Ellen Jessie,	*Racine.*
Cunningham, Isabel Margaret,	*Chippewa Falls.*
Curtiss, Mildred Harriet,	*Madison.*
Davis, Bertha Eleanor,	*Madison.*
DeLacy, John Byron,	*Viroqua.*
DeLap, Darwin,	*Kansas City, Mo.*
DeLap, Florence May,	*Maywood, Ill.*
Dexter, Elise Forsythe,	*Madison.*
Distelhorst, Walter Louis William,	*Dorchester.*
Dodge, Charles Wilson,	*Windsor.*
Dodge, Mary Louise,	*Windsor.*
Donovan, Leo,	*Waupun.*
Donovan, Margaret Monica,	*Madison.*
Draves, Minnie Theresa,	*Milwaukee.*
Drury, Alfred Leslie,	*Union Grove.*
Duke, Henry Clay,	*Madison.*
Dunlap, Robert Bancroft,	*Waukesha.*
Dunwiddie, Stanley Gray,	*Janesville.*
Durst, May Louise,	*Monroe.*
Earl, Florence Corlett,	*Lake Mills.*
Ely, Richard Sterling,	*Madison.*
Evans, Alice Esther,	*Spring Green.*
Falconer, Ernest Henry,	*Prentice.*
Falk, Rolf Orlando,	*Stoughton.*
Fargo, Mattie Pauline,	*Lake Mills.*
Fay, Martha Marian,	*Madison.*
Fisher, Eunice Estella,	*Paw Paw, Ill.*
Fries, Jane,	*Richland Center.*
Fruit, Clarence Henry,	*La Crosse.*

*Died March 17, 1904.

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Gapen, Mildred Kegonsa,	*Madison.*
Gilfillan, William Ray,	*West Salem.*
Gipe, James Coleman,	*Indianapolis, Ind.*
Glenz, Emma Louise,	*Madison.*
Gordon, Mabel Jean,	*Waupaca.*
Grant, Goldie Kate,	*Milwaukee.*
Hammersley, Ellen,	*Madison.*
Higgs, Walter,	*Advance, Ind.*
Hannan, George Francis,	*Milwaukee.*
Harvey, Elizabeth Katherine,	*Racine.*
Heinemann, Fred,	*Wausau.*
Herrick, Lucretia Mae,	*Ripon.*
Hetzel, Ralph Dorn,	*Madison.*
Hickish, Tessie Frances,	*La Crosse.*
Hillis, Charles William,	*Bathgate, N. D.*
Holcomb, Fred Maurice,	*Brodhead.*
Holmes, Emily Elinor,	*Baldwin.*
Holmes, Frederick Lionel,	*Waukau.*
Hopson, Howard Colwell,	*Ft. Atkinson.*
Houghton, Grace Adams,	*West Salem.*
Howard, Emmett Budlong,	*Marshalltown, Iowa.*
Hueffner, Martin Matthew,	*Racine.*
Hunter, Berenice Drew,	*Ft. Atkinson.*
Hunter, Gertrude Hazel,	*Racine.*
Ingalls, Edna Jannet,	*Menomonie.*
James, Albert Earl,	*Madison.*
Johnson, Francis Ellis,	*Des Moines, Iowa.*
Johnson, Jessie Vera,	*Eau Claire.*
Johnson, Marjorie Daw,	*Madison.*
Jolivette, Hally Delilia Mary,	*La Crosse.*
Kadish, Victor Hugo,	*Milwaukee.*
Ketchpaw, Erma Louise,	*Madison.*
Ketchpaw, Maude Luella,	*Madison.*
Kimball, Euretta Mary,	*Janesville.*
King, Clarence Baker,	*Madison.*
Kissling, Arthur Charles,	*Milwaukee.*
Knoblock, Milton James,	*Racine.*
Knowlton, Philip Arnold,	*Madison.*
Knudson, Agnes Caroline,	*Madison.*
Koch, Edna May,	*Fairdale, Ill.*
Kroehnke, Adalia Laurentine,	*Thiensville.*
Kuhlmann, Charles Byron,	*Wausau.*

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Kümmel, Julius Frank,	*Milwaukee.*
Kunz, Litta,	*Freeport, Ill.*
Kussel, Irma Lizette,	*Watertown.*
Lackner, Florence Helen,	*Aurora, Ill.*
Lamfrom, Leon Benedict,	*Milwaukee.*
Leinberger, George Philip,	*Fillmore.*
Loeb, Max,	*Appleton.*
Loranger, Madge Winifred,	*Ashland.*
MacKenzie, Fred William,	*Blue Mounds.*
MacMillan, Maud Ethele Jane,	*Wauwatosa.*
Mapel, John Wallace,	*Milwaukee.*
Mason, Ora Lottie,	*Sharon.*
McConochie, George Stewart.	*Cambria.*
McCormick, Edith Traftan,	*Sparta.*
McKay, Sara Roxey,	*Madison.*
Meadows, Orley James,	*Oconomowoc.*
Merrill, Louise,	*Janesville.*
Miller, Adelaide,	*Chippewa Falls.*
Minch, Katherine Salome,	*Madison.*
Morse, Nona Troy,	*Nashua, Iowa.*
Mowry, Don Ensminger,	*Milwaukee.*
Mulcahy, Max John,	*Madison.*
Mulick, Marion Gray,	*Watertown.*
Munroe, Maude Maxwell,	*Baraboo.*
Munson, Barbara Merrille,	*Viroqua.*
Nelson, Alice Mary,	*Madison.*
Newman, Ross Byron,	*Juda.*
O'Brien, John Patrick,	*Randolph.*
Ochsner, Washington Henry,	*Prairie du Sac.*
Olsen, Laura Marie,	*Eau Claire.*
Olin, Edna Jane,	*Belleville, Ohio.*
Ott, Edwin,	*Oak Park, Ill.*
Pallansch, Arthur John,	*Fredonia.*
Parker, Marie,	*Fennimore.*
Patterson, Anna Louise,	*North Freedom.*
Patterson, Elizabeth,	*Baraboo.*
Patterson, Walter LaFayette,	*Baraboo.*
Peckham, George William, Jr.,	*Milwaukee.*
Poole, DeWitt Clinton, Jr.,	*Madison.*
Potter, Paul David,	*Madison.*
Pugh, Lielah Marguerite,	*Mazomanie.*
Ravn, Agnes,	*Merrill.*

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Ravn, Bjarne,	*Merrill.*
Ray, George Rankin,	*Waukesha.*
Raymond, Lela Maude,	*Sharon.*
Reid, Alice Jane,	*Oconomowoc.*
Richards, Clara Alida,	*Madison.*
Richter, Arthur William,	*Milwaukee.*
Rietow, Florence Georgiana,	*Sheboygan.*
Risley, Guy Franklin,	*Baraboo.*
Roberts, Agnes Ida,	*Milwaukee.*
Roderick, Benjamin Hur,	*Brodhead.*
Roderick, Dwight Lyman,	*Brodhead.*
Rogers, Bertha Harriet,	*Port Byron, Ill.*
Rosenheimer, Alexander Benj.,	*Schleisingerville.*
Rosenheimer, Newton William,	*Kewaskum.*
Rosenstengel, Helen Alice,	*Madison.*
Rostad, Magdalene,	*Milwaukee.*
Rudolph, Florence Anne,	*Canton, S. D.*
Runge, Alma Mathilda,	*Madison.*
Ryan, Marion Eva,	*Wausau.*
Sanborn, Norman Walker,	*Madison.*
Sands, Mamie Alice,	*Dodgeville.*
Schmitt, Ella,	*Green Bay.*
Schram, Peter Henry,	*Madison.*
Scott, Fern,	*Sparta.*
Seiler, George Ann,	*Monroe.*
Severin, Harry Henry,	*Milwaukee.*
Smith, Anna DuPre,	*Madison.*
Smith, Elsie Elizabeth,	*Hinsdale, Ill.*
Smith, Osmore Ray,	*Sparta.*
Southworth, Pierre Duane,	*Monroe.*
Steidtmann, Edward,	*Prairie du Sac.*
Stevens, Meda Bee,	*Evansville.*
Stockman, Rebecca,	*Milton Junction.*
Stone, Anna Louise,	*Reedsburg.*
Strassburger, Erna Dorothea,	*Cedarburg.*
Stroud, Perry Curtis,	*Portage.*
Sunderland, Clarence Samuel,	*Madison.*
Sutherland, Ella,	*Janesville.*
Swenson, Edna Grace,	*Madison.*
Taylor, Lily Ross,	*Madison.*
Thomas, Mary Ella,	*Berlin.*
Thomas, Sarah Margaret,	*Eau Claire.*

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Thwaites, Fredrik Turville,	*Madison.*
Tirrill, Marie Edith,	*Madison.*
Tobenkin, Elias Isaac,	*Madison.*
Tormey, Julia Florence,	*Madison.*
Turvill, Helen,	*Madison.*
Twesme, Albert Theodore,	*Ettrick.*
Vail, Claude Mitchell,	*Benton.*
*Van Ingen, Edward Lawton,	*Kenosha.*
*Van Ingen, John,	*Kenosha.*
Van Velzer, Marion,	*Madison.*
Walsh, William Thomas,	*Dubuque, Iowa.*
Washburn, Martha Lucile,	*Sturgeon Bay.*
Waterbury, Mary Edith,	*Prairie du Sac.*
Watrous, Maude Evangeline,	*Omaha, Neb.*
Weatherlow, Guy Porter,	*Madison.*
Whaley, Clyde Holden,	*Waupun.*
White, Charlotte Eleanor,	*Madison.*
White, Dorothy Elaine,	*Madison.*
Whitney, Helen Goldsmith,	*Madison.*
Whittier, Rowena Maud,	*Madison.*
Wright, Frederick Charles,	*Madison.*
Youche, Julian,	*Crown.*
Zeiher, Emeline Elizabeth,	*West Bend.*

Course in Commerce.

Anderson, Louis Martin,	*Mt. Horeb.*
Arnold, Marshall,	*Peotone, Ill.*
Barrett, William Richard,	*Merrill.*
Berge, Matthew Garland,	*Eau Claire.*
Coburn, George Wallace,	*Whitewater.*
Collie, Ralph Waldo,	*Merrill.*
Conway, Thomas,	*Elroy.*
Crissey, Merrill Henry,	*Janesville.*
Dahl, Harry Julius,	*Westby.*
Doyle, William Thomas,	*Fennimore.*
Emerson, Frank Gilbert,	*Chippewa Falls.*
Erickson, Joseph Samuel,	*Rice Lake.*
Evjue, William Theodore,	*Merrill.*
Fessler, Edward John,	*Sun Prairie.*
Field, Carl Alfred,	*Madison.*
Findlay, Albion Roy Garfield,	*Madison.*

*Died December 30, 1903.

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Fitch, Joseph Porter,	*Oshkosh.*
Heisinger, Charles Richard,	*Oshkosh.*
Hoefs, Marcus Franklin,	*Green Bay.*
Houghton, Hiram Cole, Jr.,	*Red Oak, Iowa.*
Hueffner, Frederick William,	*Racine.*
Johnson, Floyd Everett,	*Thornton, Iowa.*
Kessenich, Frank, Jr.,	*Madison.*
Kinsey, Zebulon Bradley,	*Milwaukee.*
Kremer, Paul Henry,	*Milwaukee.*
Kuehmsted, Arthur Odin,	*Appleton.*
Latshaw, Stanley Riddell,	*Wausau.*
Lehmann, William Van Vechten,	*Neosha.*
Lewis, Evariste Martel,	*Plantsville, Conn.*
Lewis, Gordon Marse,	*Highland.*
Lewis, Rollin Church,	*Janesville.*
Lindemann, Albert Louis,	*Milwaukee.*
Marsh, Charles Drennen,	*Evanston, Ill.*
McNally, Walter Harry,	*Cedar Falls, Iowa.*
Nadler, John Fred,	*Verona.*
Nelson, Charles Edward,	*Superior.*
Patten, Lee Francis Corbley,	*New Richmond.*
Peterson, Nels John,	*Marinette.*
Potter, Herman Monroe,	*Madison.*
Roberts, Chester Burleigh,	*Milwaukee.*
Sackett, Edwin Hiram,	*Fond du Lac.*
Schorer, Arno Robert,	*Plymouth.*
Slagsvol, Thomas Richard,	*Eau Claire.*
Sleep, Walter I.,	*Waukesha.*
Sprecher, Walter Edmund,	*Independence.*
Strong, Arthur,	*Dodgeville.*
Todd, Fred Arthur,	*Aurora, Ill.*
Wells, Hugo Smith,	*DePere.*
Wittkorn, Thomas Henry,	*Swarthmore, Pa.*

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FRESHMAN CLASS.

Adams, Elsie Louise,	*Dunbar.*
Aldrich, Loyal Blaine,	*Milwaukee.*
Amott, Albert Louis,	*Viroqua.*
Amundson, Emmet Julius,	*Cambridge.*
Anderson, Esther,	*Madison.*
Angell, Nellie Nadine,	*Sun Prairie.*
Armstrong, Vermilion,	*Madison.*

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Barker, Blanche Jessie,	*Ipswich, S. D.*
Barnes, Henry Davis, Jr.,	*Elkhorn.*
Bartlett, Roy Richmond,	*Madison.*
Bednarek, Joseph Leon,	*Beaver Dam.*
Bellach, Mabel Janette,	*Milwaukee.*
Besley, Harold Joslyn,	*Waukegan, Ill.*
Bewick, William Medhurst,	*Sun Prairie.*
Bibbs, Arthur Darrel,	*Madison.*
Binz, Elsie,	*Chicago, Ill.*
Blackburn, Carolyn Etta,	*Madison.*
Blied, Matilda Elizabeth,	*Madison.*
Boldenweck, Louis Henry,	*Chicago, Ill.*
Boorman, Leal Mary,	*Mauston.*
Bowen, Rose Andrews,	*Greenwood.*
Boyd, T. Logan,	*Chicago, Ill.*
Brady, Daniel Leo,	*Mt. Hope.*
Bray, Margaret Hazel,	*Oshkosh.*
Brewster, Harriet Jane,	*Madison.*
Briedenbach, Otto Henry,	*Milwaukee.*
Breitenfeld, Ella Meta,	*Madison.*
Brimi, Frederick Louis,	*Eau Claire.*
Brockway, Lula Belle,	*Lancaster.*
Bushnell, Alfred Hanson,	*Lancaster.*
Byrne, Mary Frances,	*Madison.*
Carey, Alice Matilda,	*Madison.*
Carey, Loretta Helen,	*Sioux City, Iowa.*
Cary, Lucien Herbert,	*Madison.*
Cary, Walter Eugene,	*Denver, Col.*
Cavanagh, Richard Parkinson,	*Kenosha.*
Churchill, Ethel Elizabeth,	*Monroe.*
Clark, Floyd Milton,	*Chadron, Neb.*
Clark, Susan Mildred,	*Galesville.*
Clough, Ethel Pearl,	*Portage.*
Collman, Chester William,	*Madison.*
Comstock, Verna Victorine,	*Milwaukee.*
Cook, C. Alvah H.,	*Milton Junction.*
Cooper, Belva Naomi,	*Rochester.*
Corstvet, Anna Alice,	*Deerfield.*
Crosse, Edith Rowena,	*Sun Prairie.*
Dahl, Elnora Ingeborg,	*Westby.*
Dahmen, Frederick William,	*Cross Plains.*
Dake, Charles Laurence,	*Sparta.*

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Damuth, Frank Burton,	*Ft. Atkinson.*
Daniells, William Nathaniel,	*Madison.*
Davis, Benjamin Franklin,	*Madison.*
Davison, Grace Wilhelmina,	*Necedah.*
Devine, Bennett Marvin,	*Evansville.*
Dodge, Edgar Clark,	*Spooner.*
Dodte, Carl Gilbert,	*Neillsville.*
Donovan, John Guy,	*Windsor.*
Dorschel, Hugo Lucas,	*Chilton.*
Dorwin, Harvey Crosby,	*Sparta.*
Douglas, Ella May,	*Winona, Minn.*
Dowe, Lillian,	*Bangor.*
Drips, Della Gay,	*La Crosse.*
Dunn, May Vanancia,	*Madison.*
Eder, Joseph,	*Milwaukee.*
Edwards, Alma,	*Beaumont.*
Ekern, Ruth Nathalia,	*Madison.*
Ellefson, Clarence Ferdinand,	*Madison.*
Ellefson, Elmer Winter,	*Madison.*
Ellefson, Mabel Selma,	*Madison.*
Elliott, Laura Belle,	*Eau Claire.*
Esch, Fred Henry,	*Manitowoc.*
Etter, Inez Martha,	*Monroe.*
Eustice, Ollie Jane,	*Livingston.*
Eyman, Elmer Vail,	*Chicago, Ill.*
Farness, Simon Louis,	*Madison.*
Fay, Helen Armine,	*Madison.*
Ferry, Albert Montague,	*Evanston, Ill.*
Field, Abiathar William,	*Baltimore, Md.*
Fitch, Stewart Jackson,	*Freeport, Ill.*
Fitzgerald, John,	*Albany.*
Fjoslien, Sigrid,	*Bergen.*
Flett, Elizabeth Townsend,	*Racine.*
Forbes, Mary Alice,	*Hartford.*
Forward, Abigail Lois,	*Berlin.*
Fox, Bessie Gordon,	*Madison.*
Frankenburger, Margaret,	*Madison.*
Frautschi, Lillian,	*Madison.*
Fries, Arthur Abel,	*Wind Lake.*
Frost, Raymond,	*Rockford, Ill.*
Garner, Homer Clifford,	*Richland Center.*
Gaynor, Bessie Prudence,	*Grand Rapids.*

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Gilfillan, Ella Barbara,	*West Salem.*
Gillespie, James Edward,	*Stockbridge.*
Gilman, Helen Leonard,	*Madison.*
Gilmore, Grace Allen,	*Auburn, Neb.*
Gilpatrick, Samuel Irving,	*Milwaukee.*
Goe, Sara Belle,	*Madison.*
Goldschmidt, Hulda Hanchen,	*Earlsville, Ill.*
Gourlie, Grace Bisbee,	*Oconomowoc.*
Gray, Harry Leon,	*Mazomanie.*
Greene, Margaret Abby,	*Fargo, N. D.*
Grey, Ernest George,	*Milwaukee.*
Grove, Helen Theo,	*Madison.*
Grow, Grace Lillian,	*Neillsville.*
Gugler, Ralph George,	*Milwaukee.*
Hacker, Emil Frederick,	*Arcadia.*
Hall, Lucy,	*Watertown.*
Hammersley, Carrie May,	*Madison.*
Hammersmith, Paul Walter,	*Milwaukee.*
Hanton, Carl,	*Superior.*
Harker, Elva,	*Dodgeville.*
Harper, Hugh Allen,	*Madison.*
Harris, Helen Louise,	*Racine.*
Haseltine, Nina May,	*Black Earth.*
Hatton, Arthur Wilson,	*Peru, Ill.*
Hayden, Pearl Catherine,	*Sun Prarie.*
Haynes, Nina Rose,	*Chicago, Ill.*
Head, Helen Louise,	*Albion.*
Heg, James Elmer,	*Elizabeth, N. J.*
Heinrich, Ida Amanda,	*Blairstown, Iowa.*
Hinckley, Cora Case,	*Milwaukee.*
Hitchcock, Raymond Royce,	*St. Cloud, Minn.*
Hobbins, Fannie,	*Madison.*
Hobbins, Grace,	*Madison.*
Hoffman, Edward Wakefield,	*Milwaukee.*
Holum, Ruth Caroline,	*De Forest.*
Hopkins, Mabel Ruth,	*Rockford, Ill.*
Hoyt, James Mitchell,	*Evanston, Ill.*
Hurd, Helen Margaret,	*Chippewa Falls.*
Inbusch, Charles Edward,	*Milwaukee.*
Ishmael, Oscar,	*Cassville.*
Ives, George,	*Ft. Atkinson.*
Jamieson, Laura Belle,	*Poynette.*

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Janecky, Adolph Rudolph,	*Racine.*
Jedney, Eli Severin,	*Ettrick.*
Jenny, Herbert John,	*Milwaukee.*
Johnson, Isabel Reid,	*Portage.*
Jones, Edwin Converse,	*Portage.*
Kaiser, Carl William,	*Marshall.*
Keller, Irmagarde,	*Janesville.*
Ketchum, Edith Irene,	*Racine.*
Ketel, Emilie Albertine,	*Neillsville.*
Knight, Charles,	*Mineral Point.*
Koenig, Robert Franklin,	*Freeport, Ill.*
Kostalek, John Anton,	*Milwaukee.*
Krey, August Charles, Jr.,	*Milwaukee.*
Kuntz, William Henry,	*Poynette.*
Lambeck, Arthur Hugo,	*Milwaukee.*
Langenhan, Selma,	*Ableman.*
Langwill, Minnie,	*Rockford, Ill.*
Larsen, Alfred,	*Wausau.*
Larsen, Lewis P.,	*Whitehall.*
Lauderdale, Roy,	*Elkhorn.*
Lea, Mabel Emma,	*Clinton, Iowa.*
Leslie, Donald Eugene,	*Clinton, Iowa.*
Little, Mabelle Lillian,	*Portage.*
Lloyd, Hubert Evan,	*Cambria.*
Loft, Genivera Edmunds,	*Greenwood.*
Loomis, Arthur Mayhew,	*Clinton.*
Luchenbach, Walter,	*Oconto.*
Lundberg, Emma Octavia,	*Rockford, Ill.*
Lurvey, Edward Jackson,	*Foud du Lac.*
Maas, Bertha Helen,	*Milwaukee.*
Mabbett, Jessie Margaret,	*Edgerton.*
Mace, Florence Isabel,	*Duluth, Minn.*
Madson, Charles Andrew,	*Racine.*
Manning, Florence Edna,	*Belvidere, Ill.*
Manning, Hazle,	*Madison.*
Mansfield, John Waterbury,	*Milford.*
Marks, Rachel,	*Sun Prarie.*
Marsh, Helen,	*Neillsville.*
Marshall, Roy R.,	*East Troy.*
Maurer, Erna Edna,	*Arcadia.*
Mayhew, William A., Jr.,	*Clinton.*
Maynard, Emma Hughes,	*Milwaukee.*

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McCarthy, Frank,	*Stoughton.*
McClernan, Thomas Joseph,	*Madison.*
McCrillis, Faith Almira,	*Hampton, Iowa.*
McCue, Cornelia,	*Madison.*
McDonald, Anna Grace,	*Portage.*
McDonough, Violette Margaret,	*Eau Claire.*
McGilvra, Ethel Rose,	*Baraboo.*
McKey, Camilla Worm,	*Whitewater.*
McKey, Elizabeth Douglas,	*Janesville.*
McNutt, Merna Thiele,	*Portage.*
Mead, Arlisle Maria,	*Plymouth.*
Melcher, Alice Frances,	*Hindsdale, Ill.*
Memhard, Ella Lucea,	*Madison.*
Menzies, Charles Stuart,	*Janesville.*
Menzies, Isabel MacGregor,	*Janesville.*
Mereness, Mason LeRoy,	*Delavan.*
Milbrath, Edwin Charles,	*Milwaukee.*
Miller, Florence Masher,	*Rhinelander.*
Milward, Daisy,	*Madison.*
Minn, Elsie Marcellite,	*Milwaukee.*
Mix, Faith Dorothy,	*Madison.*
Moffat, Robert Thornton,	*Davenport, Iowa.*
Moll, Dorothea Alvyna,	*Madison.*
Montgomery, Harry Gage,	*Omaha, Neb.*
Moore, Robert DuPont,	*Madison.*
Morse, Byrrd Pearl,	*Madison.*
Mortenson, Laura Dorothea,	*Racine.*
Moser, Hildred Daisy,	*Madison.*
Mountin, James Joseph,	*Hartford.*
Mueller, Erma Voshardt,	*Two Rivers.*
Munson, Helen Alice,	*Viroqua.*
Nash, Royal Freeman,	*Grand Rapids.*
Nelson, Oliver Otto,	*Madison.*
Neprud, Martha,	*Westby.*
Newman, Celia Elizabeth,	*Madison.*
Nicholson, Delos Charles,	*Edgerton.*
Noyes, Miriam,	*Oshkosh.*
O'Connor, Prue Louise,	*Merrill.*
Oestrich, William Charles,	*Kewaunee.*
O'Hara, Donald McMillan,	*Iron Mountain, Mich.*
O'Keefe, Mary Calista,	*Portage.*
Olin, Mary Estelle,	*Belleville, Ohio.*

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Oliver, Sadie Inez,	*Racine.*
Orvis, Mary Burchard,	*Madison,*
Parker, Amy,	*Fennimore.*
*Parish, Rosamond Pierce,	*Chicago, Ill.*
Parsons, Caryl,	*Madison.*
Patterson, Mark Lawrence,	*Baraboo.*
Pauling, George Curtis,	*Superior.*
Peck, Myrtle Elizabeth,	*Bangor.*
Pelton, Edith Lovina,	*Madison.*
Pengra, Stella May,	*Madison.*
Perry, Clayton Shields,	*Rice Lake.*
Peterson, Emma Janette,	*Madison.*
Petrie, Rollie Al,	*Mauston.*
Pettigrew, Bessie,	*Sioux Falls, S. D.*
Pettigrew, Nina,	*Sioux Falls, S. D.*
Pettigrew, Paul Frederick,	*Sioux Falls, S. D.*
Pfafflin, Frieda Louise,	*Indianapolis, Ind.*
Pitkin, Frances Clara,	*Chicago, Ill.*
Proud, Mary Hannah,	*Madison.*
Quan, Clara Eugenia,	*Madison.*
Read, James Burton,	*Lake Geneva.*
Rehfeld, Minnie Elmida,	*Horicon.*
Richards, Dane Christopher,	*Monticello.*
Richards, Jesse Lawrence,	*Madison.*
Richmond, Daniel,	*Morrison, Iowa.*
Roach, Rollin Edwin,	*Rock Rapids, Iowa.*
Roberts, Margery,	*Milwaukee.*
Robinson, Earl Jay,	*Fort Dodge, Iowa.*
Rogers, Augustus James, Jr.,	*Milwaukee.*
Rosholt, Emma Josephine,	*Oconomowoc.*
Rowe, Mae Edith,	*Plymouth.*
Ruste, Anne Marguerite,	*Charles City, Iowa.*
Ryan, Michael Francis,	*Mazomanie.*
Sanborn, Eugene Hiram,	*Madison.*
Sanborn, George Allan,	*Madison.*
Sanderson, Katherine Moore,	*Madison.*
Schaus, Irving Peter,	*Milwaukee.*
Schneider, Francis Lee,	*West Salem.*
Schnell, Lottie Irene,	*Madison.*
Schroeder, Arthur,	*Racine.*
Scott, Genevieve Allen,	*Lake Geneva.*

*Died December 30, 1903.

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Scott, Jeanette Marie,	*Hudson.*
Secrist, Horace,	*Farmington, Utah.*
Seeber, Beulah Muriel,	*Waterloo.*
Seeger, Paul August,	*Milton Junction.*
Seiler, Alexander Walter,	*Madison.*
Seilstad, Edna Theodora,	*La Crosse.*
Selmer, John Jacob,	*Eau Claire.*
Sensui, Yasu,	*Tokyo, Japan.*
Shattuck, Charles Doton,	*Medford.*
Shaw, Emma Hart,	*Madison.*
Sheets, Winifred Gaile,	*Greenwood.*
Sheldon, Helen Miriam,	*Madison.*
Siebecker, Carl LaFollette,	*Madison.*
Smalley, Alice,	*Madison.*
Smith, Courtland,	*New York.*
Smith, Diana Jean,	*Mondovi.*
Smith, Eleanor Clemons,	*Madison.*
Sprague, William Harvey,	*Elkhorn.*
Steele, Acel Robert,	*Stevens Point.*
Steig, Josie,	*Whitehall.*
Stoeber, Mary Margaret,	*Madison.*
Stotzer, Oscar Frederick,	*Portage.*
Stromme, Olaf Ulring,	*Madison.*
St. Sure, Jeannette Lucile,	*Madison.*
Sullivan, Arthur George,	*Eau Claire.*
Sunderland, Adolph Dale,	*Kilbourn.*
Suttle, Bessie,	*Lancaster.*
Sutton, Ada Elliott,	*Edgerton.*
Swensen, Alice Mann,	*Madison.*
Swensen, Edith Dinsdale,	*Madison.*
Swensen, Henry Edward,	*Racine.*
Swint, Katherine Marie,	*Madison.*
Tanigoshi, Katustaro,	*Kimiitera, Japan.*
Taylor, Florence Wills,	*Mt. Vernon, Iowa.*
Teisberg, Halvor Orlando,	*Cottage Grove.*
*Thompson, Clyde Sylvester,	*Argyle.*
Thompson, Tilde Tomina,	*Deerfield.*
Tobin, William Frederick,	*Portage.*
Tragsdorf, Clara Christine,	*Neillsville.*
Underwood, Bessie Caroline,	*Madison.*
Underwood, Walter Scott,	*Milwaukee.*

*Died December 30, 1903.

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Usher, Florence Lou,	*Madison.*
Wald, Anna Charlotte,	*Madison.*
Waldeck, George Matthew,	*Milwaukee.*
Walechka, John Howard,	*Clintonville.*
Walker, Alice Mary,	*St. Croix Falls.*
Walker, Louise Estelle,	*Madison.*
Watson, Leah Lillian,	*Blairstown, Iowa.*
Wehmhoff, Frieda Gertrude,	*Burlington.*
Whelan, Judson Sutherland,	*Mondovi.*
Whelan, Letta Helen,	*Madison.*
Whidden, Marian,	*Oak Park, Ill.*
Whitcomb, Grace,	*Monroe.*
White, Jean Elizabeth,	*South Bend, Ind.*
Wiggenhorn, Ralph Guido,	*Watertown.*
Williams, Frankwood Earl,	*Indianapolis, Ind.*
Willis, Henrietta May,	*Winona, Minn.*
Woffenden, Ada Annastasia,	*Madison.*
Wolff, Herman William,	*Lake Mills.*
Woy, Mary Elizabeth,	*Denver, Colo.*
Wright, Marion Elizabeth,	*Baraboo.*
Wright, Murray Scott,	*Fergus Falls, Minn.*
Young, Will,	*Elkhorn.*

Course in Commerce.

FRESHMEN.

Abbott, Harry Scott,	*Madison.*
Ashman, John Harper,	*Eau Claire.*
Atwood, Seth Burton,	*Rockford, Ill.*
Baine, William Milton,	*Oneida.*
Barkhausen, Henry George,	*Green Bay.*
Bovet, Charles Edward,	*Buenos Aires S. A.*
Brewster, Eugene Moyer,	*Baraboo.*
Briggs, Bayard Earl,	*Sun Prarie.*
Brinkman, Carlyle K.,	*Superior.*
Burgy, Herman William,	*Monroe.*
Burke, Tracy Lloyd,	*La Crosse.*
Burkhart, Clinton Leonard,	*Oswego, Ill.*
Bush, Charles Oscar,	*Viroqua.*
Carpenter, Arthur Espenette,	*Windsor.*
Carpenter, Frank Whitney,	*Evanston, Ill.*
Chase, Joseph Benjamin,	*Sun Prarie.*
Coe, Jerome Henry,	*Barron.*

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Coyner, Ralph Dunkle,	*Rockford, Ill.*
Curtin, Joseph Henry	*Madison.*
Davis, Ellis Arthur,	*Irving.*
Dorward, Glenn Giles,	*Onawa, Iowa.*
Edge, William Cleveland,	*Fennimore.*
Goldin, Herbert Dunwiddie,	*Janesville.*
Griffith, Leon Osen,	*Monroe.*
Hill, Rowland,	*Kansas City, Mo.*
Horton, Lacy,	*Grand Rapids.*
Hoyt, Lansing,	*Evanston, Ill.*
Huhn, Oscar Ferdinand,	*Cleveland.*
Hurning, Harry H.,	*Madison.*
Jaeger, Rudolph John,	*Dubuque, Iowa.*
Kahn, Isaac Ferdinand,	*Indianapolis, Ind.*
Lea, Robert Wentworth,	*Iron River.*
Luder, Leslie Jacob,	*Baraboo.*
Mabbett, George Crook,	*Milwaukee.*
McCarthy Charles Daniel,	*Edgerton.*
McGovern, Fred Peter,	*Florence.*
Morgan, William John,	*Clarks Mills.*
Morick, Robert Eugene,	*Madison.*
Mueller, Paul Gerhard,	*Chicago, Ill.*
Nelson, Charles Lawrence,	*Sturgeon Bay.*
Nolan, Henry Thomas,	*Madison.*
Oeland, Legare,	*Madison.*
Oliver, Edward James,	*Hudson.*
Parker, Harry Fletcher,	*Hudson.*
Porritt, Charles Edgar,	*Fargo, N. D.*
Prentice, Eugene Miles,	*South Bend, Ind.*
Pryor, Earl,	*La Crosse.*
Ranney, Harland Gaylord,	*Easthampton, Mass.*
Reynolds, Paul Nangle,	*Jacksonport.*
Richmond, William Mailand,	*Arcadia.*
Riley, Edmund Burke,	*Chippewa Falls.*
Riley, William,	*Darlington.*
Robbins, Frank Thomas,	*La Crosse.*
Roberts, Alfred Butler,	*Milwaukee.*
Savage, Howard Paul,	*Chicago, Ill.*
Schnetzky, Hugo Walter,	*Milwaukee.*
Schorer, Oscar Charles,	*Plymouth.*
Schranck, Valentine Edward,	*Milwaukee.*
Schuster, Addison Brown,	*Rockford, Ill.*

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Socwell, Maurice Wiley,	*Indianapolis, Ind.*
Stark, Herbert Carl,	*Milwaukee.*
Stevens, Lester Barber,	*Milwaukee.*
Stone, James Riley,	*Reedsburg.*
Strawn, Walter NeVoy,	*Ottawa, Ill.*
Tarr, Charles Albert,	*Auburn.*
Uehling, Alexander Theodore,	*Watertown.*
Volkmann, William Arnold,	*Kingston.*
Walbridge, John Solon, Jr.,	*Berlin.*
Waller, Frank Laird,	*Menominie.*
Webb, Clarence,	*Viroqua.*
Webb, DeLaney Starkweather,	*Superior.*
Week, Harold J.,	*Stevens Point.*
Woodward, Milton Lysander,	*Reedsburg.*
Wylie, Edgar Henry,	*Chicago.*

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SPECIAL STUDENTS.

Allen, Amy,	*Milwaukee.*
Allen, David King,	*Oshkosh.*
Anderson, Ethelwyn,	*Madison.*
Anthony, Roland Barney,	*Kewanee, Ill.*
Bull, Carolyn C.,	*Racine.*
Collman, Frederick Albertus,	*Madison.*
Davidson, Mabel Elsie,	*Madison.*
Dow, Bernice Edith,	*Madison.*
Fehrenkamp, Winifred,	*Milwaukee.*
Fischer, Russell, Price,	*Waukegan ,Ill.*
Hansen, Alexander Frederick,	*Waupaca.*
Hemingway, Charles Henry,	*Hanover.*
Hutchcroft, Lester William,	*Glen Haven.*
Hutton, Annie McGregor,	*Waukesha.*
Jackson, Bettina,	*Madison.*
Jones, John Charles,	*Cedar Falls, Iowa.*
Klingholz, Oscara,	*Manitowoc.*
Linne, Edna Hildegarde,	*Red Wing, Minn.*
Manz, Matilda Helena,	*New Paynesville, Minn.*
McLean, Marguerite,	*Menominie.*
Paulson, Henry Olaus.	*Perry.*
Rogers, Althea Tooker,	*Milwaukee.*
Rohr, Illma Margaret,	*Milwaukee.*
Schoephoester, Albert John,	*Reedsburg.*
Starks, Estella Marie,	*Madison.*

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Sullivan, Clara Gertrude,	*Chicago, Ill.*
Thompson, Robert Kirk,	*Milwaukee.*
Von Rohr, Lucy Emily,	*Winona, Minn.*
White, Rhoda M.,	*Madison.*

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ADULT SPECIAL STUDENTS.

Ayer, Owen,	*Unity.*
Ballu, Celine Agnes,	*Madison.*
Barnard, Elizabeth,	*Earlville, Ill.*
Berto, Elmer Charles,	*Amherst.*
Berto, Thomas J.,	*Amherst.*
Blend, Belle,	*Milwaukee.*
Bowron, Ivy Waldron,	*Green Bay.*
Brabant, Edmund Joseph,	*Madison.*
Brinsmaid, William,	*Freeport, Ill.*
Cary, Mira Treat,	*Madison.*
Cramer, Katherine Downs,	*Baraboo.*
Ender, August,	*Nelson.*
Fenton, Polly,	*Madison.*
Festerling, Edwin Garfield,	*Sheboygan.*
Glen, Mary Alice,	*Madison.*
Gray, Helen Maud,	*Milwaukee.*
Gray, Mary Josephine,	*Rhinelander.*
Handley, Edward,	*Horicon.*
Hoan, Daniel Webster,	*Waukesha.*
Howland, Marvin Wyatt,	*Madison.*
Johnson, Ida Petrine,	*West Salem.*
Kennedy, Bess,	*Neillsville.*
Langlois, Emrette Davis,	*Humboldt, Iowa.*
Legler, Alice Louise,	*Madison.*
Lynch, Benjamin,	*Lowell, Ind.*
Lyons, Nettie Regina,	*Madison.*
McDonnell, Martha Grace,	*Evanston, Ill.*
McDonnell, Mary Agnes,	*Evanston, Ill.*
Morgan, John Jeremiah,	*Cascade.*
Munson, Matthias,	*Soldiers Grove.*
O'Neill, Marian,	*Neillsville.*
Parkinson, Myra,	*Madison.*
Pynch, Jenner Alfred,	*Madison.*
Rees, Charles Prescott,	*Duluth, Minn.*
Sauerberg, Otto Frederick,	*Neillsville.*
Sawyer, Claribel,	*Minneapolis, Minn.*

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Slattery, Ida May,	*Eagle River.*
Sturdevant, Almeda Eva,	*Neillsville.*
Suter, Jessie Dwight,	*Madison.*
Walker, Ellis Janet Walker,	*Fond du Lac.*
Wellman, Rose Charlton,	*Washington, D. C.*
Williams, Elmer Howard,	*Soldiers Grove.*
Witherbee, Exie Lillian,	*Hazel Green.*
Wrabetz, Joseph,	*Kewaunee.*

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ADULT SPECIAL STUDENTS, COURSE IN COMMERCE.

Dougherty, William Dawson,	*Arena.*
Horrigan, John Frank,	*Sioux City, Iowa.*
Jones, Arthur Romain,	*Dodgeville.*
Kimberly, Henry Hewitt,	*Neenah.*
Nye, Robert Clark,	*Ogden, Utah.*
Rockman, Julius,	*Barron.*
Schmoeger, Harry,	*Sterling, Ill.*
Wiggenhorn, Constance, Jr.,	*Watertown.*

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Course in Pharmacy.

FOUR YEARS' COURSE.

Holden, Isabel Augusta,	*Madison,*	Junior.
North, Harry Briggs,	*Janesville,*	Senior.
Rabak, Frank,	*Webster, S. D.,*	Junior.
Tweeden, Melvin Eugene,	*Oconomowoc,*	Junior.
Whittaker, Harold Arthur,	*Oconomowoc,*	Junior.

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TWO YEARS' COURSE.

Bauer, Alfred Henry,	*Brownsville,*	Second year.
Boyce, Milledge Arthur,	*Greenwood,*	First year.
Buck, Warren Thomas,	*Stevens Point,*	First year.
Burnley, John Philip,	*Hudson,*	First year.
Burns, Thomas Jay,	*Oakfield,*	Second year.
Byers, Benton Bayard,	*Monroe,*	Second year.
Creeden, Frank Bernard,	*Greenleaf,*	Second year.
DuMez, Andrew Grover,	*Cashton,*	Second year.
Fuhrman, Louis Jacob,	*Fond du Lac,*	First year.
Hansen, Edward Albert,	*Blair,*	Second year.
Hassall, George Anschutz,	*Keokuk, Iowa,*	Second year.
Hess, Winfield Scott,	*Johnson Creek,*	First year.

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Joslin, George Albert,	*Madison,*	Second year.
Koehler, Jake Walter,	*Madison, S. D.,*	First year.
Lindsay, Stewart,	*Plymouth,*	First year.
Longfield, Raymond Patrick,	*Madison,*	First year.
Lueders, Ernest Richard,	*Columbus,*	First year.
Pasternacki, John George,	*Stevens Point,*	First year.
Russell, Harold Clark,	*Madison,*	First year.
Schlei, Fred Frank,	*Oconomowoc,*	Second year.
Shaw, Harold Ironside,	*Milwaukee,*	First year.
Sievers, Arthur Frederick,	*New Holstein,*	First year.
Smith, Arthur Frederick,	*Oconomowoc,*	Second year.
Smith, Hermoine,	*River Falls,*	First year.
Squier, Stanley Lynn,	*Tomah,*	Second year.
Thenee, Henry Charles,	*Milwaukee,*	First year.
Ulve, Lewis,	*Boscobel,*	First year.
Zieglemann, Edward Frank,	*La Crosse,*	First year.

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College of Mechanics and Engineering.

SENIOR CLASS.

Barber, Edwin Lamont,	*Kansas City, Mo.*	E. E
Benedict, Wallace James,	*Milwaukee.*	M. E.
Bingham, Joseph Inhoff,	*Lockwood, N. Y.,*	C. E.
Bishop, Warren Joseph,	*Milwaukee,*	G. E.
Bleser, Arthur Joseph,	*Manitowoc,*	G. E.
Blood, Frank Herbert,	*Kenosha,*	E. E.
Bradford, William,	*Stevens Point,*	E. E.
Burns, Joseph Patrick,	*Madison,*	C. E.
Cahoon, Ora Butler,	*Madison,*	M. E.
Carter, Archie Bert,	*Humbird,*	G. E.
Carter, Charles Edward,	*Milwaukee,*	E. E.
Carter, Perry John,	*Mauston,*	C. E.
Cheney, Seymour Wyatt,	*Fond du Lac,*	M. E.
Coon, Royden Jonas,	*Plainfield,*	C. E.
Crumpton, William Jairus,	*Superior,*	E. E.
Dessert, Howard Louis,	*Mosinee,*	C. E.
Elvis, George Harvey,	*Medford,*	M. E.
Erwin, Orlando Richard,	*Milwaukee,*	E. E.
Eustis, Charles Loron,	*Madison,*	E. E.
Fisher, Ernest James,	*Beaver Dam,*	C. E.
Flaig, John Fred,	*Sheboygan,*	C. E.

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Frost, Donald Karn,	*Madison.*	E. E.
Galloway, Edward William,	*Whitewater,*	M. E.
Gardner, Harry,	*Monroe,*	C. E.
Garvens, Gustave Walter,	*Madison,*	C. E.
Gilman, James Moseley,	*Madison,*	C. E.
Goetz, Edgar August,	*Milwaukee,*	G. E.
Graff, Christian Frederick,	*Seattle, Wash.,*	C. E.
Griswold, Robert Gray,	*West Salem,*	M. E.
Hagenah, Rudolph Emil,	*Reedsburg,*	M. E.
Hall, Edwin Morgan,	*Chicago, Ill.,*	E. E.
Hall, Merton Glenn,	*Reedsburg,*	C. E.
Hanson, Frank Herbert,	*Stoughton,*	E. E.
Haugen, Charles Marius,	*Chicago, Ill.,*	E. E.
Hauser, William Henry,	*Fargo, N. D.,*	M. E.
Heidemann, Walter Richard,	*Waterloo,*	E. E.
Henry, Robert Roy,	*Anchorage,*	E. E.
Hillemeyer, Joseph Edward,	*Shullsburg,*	E. E.
Hodge, John Sherman,	*Waupun,*	M. E.
Holloway, Don Clement,	*Janesville,*	M. E.
Hopper, Charles Van Emburg,	*Eau Claire,*	C. E.
Jensen, Carl William,	*River Falls,*	C. E.
Jorstad, Osmund Marcellus,	*La Crosse,*	G. E.
Kahn, Gustave Edmund,	*Milwaukee,*	C. E.
Kinne, William Spaulding,	*Winona, Minn.,*	C. E.
Klinkert, George Peter,	*Racine,*	E. E.
Koch, Walter John,	*Milwaukee,*	M. E.
Krippner, Arthur Frederick,	*Lake Mills,*	E. E.
Larson, Clarence Melrose,	*Madison,*	C. E.
Lathrop, Leigh Hunt,	*Madison,*	E. E.
Lee, Allan,	*Cambridge,*	G. E.
Lee, Norman,	*Cambridge,*	E. E.
MacArthur, Donald,	*West Superior,*	M. E.
MacEachron, Edgar James,	*West DePere,*	M. E.
Martin, Hal Eugene,	*Fond du Lac,*	C. E.
McDonald, Harry L.,	*Madison,*	C. E.
Merrill, Zadok,	*Madison,*	G. E.
Moorhouse, Louis Benjamin,	*Lake Geneva,*	M. E.
Moritz, Ernest Anthony,	*Madison,*	C. E.
Murphy, Francis Hayes,	*Muscoda,*	E. E.
Musil, Louis Frederick,	*Manitowoc,*	E. E.
Musser, James Marc,	*Madison,*	E. E.
Nicolaus, Arthur William,	*Beaver Dam,*	C. E.

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Noyes, John Draper,	*Baraboo,*	E. E.
Omara, Edwin Horn,	*Chicago, Ill.,*	C. E.
Owen, Ray,	*Footville,*	C. E.
Peters, Charles Sumner,	*Dodgeville,*	E. E.
Petura, Frank Joseph,	*Racine,*	E. E.
Post, George Gilbert,	*Madison,*	E. E.
Rowe, William Allard,	*Eau Claire,*	E. E.
Rowley, Frank Benjamin,	*Evansville,*	M. E.
Saridakis, Frank John,	*Milwaukee,*	M. E.
Schwendener, Harry Garfield,	*Milwaukee,*	E. E.
Servis, Frank Arthur,	*La Crosse,*	E. E.
Shealy, Edward Marvin,	*Columbia, S. C.,*	E. E.
Sloan, William Franklin,	*Boseman, Mont.,*	E. E.
Staack, John George,	*Middleton,*	C. E.
Stephens, Walter Hayward,	*Chicago, Ill.,*	M. E.
Stewart Arthur Thomas,	*Los Angeles, Cal.,*	E. E.
Stewart, James Alexander,	*Superior,*	E. E.
Stillman, Carl Frederic,	*Milwaukee,*	M. E.
Terrell, Edward Everett,	*Madison,*	C. E.
Torkelson, Martin Wilhelm,	*Black River Falls,*	C. E.
Townsend, John Robert,	*Waupaca,*	E. E.
Treber, Albert Philip,	*Deadwood, S. D.,*	E. E.
Uihlein, William Benedict,	*Milwaukee,*	M. E.
Van Hagen, Leslie Flanders,	*Madison,*	C. E.
Warner, Henry Michael,	*Baltimore, Md.,*	C. E.
Watson, Charles Thomas,	*Baraboo,*	C. E.
Whitby, Willis,	*Jericho,*	C. E.
Whiting, Max Albert,	*Watertown,*	E. E.
Zaremba, Edward,	*Chicago, Ill.,*	E. E.
Zimmerman, James Garfield,	*Milwaukee,*	E. E.
Zinke, Paul Frederick,	*Fond du Lac,*	E. E.
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JUNIOR CLASS.

Anger, Bernhard Frederick,	*Milwaukee,*	M. E.
Balch, Leland Rella,	*Neillsville,*	C. E.
Barnard, Archer Fortescue,	*St. Joseph, Mo.,*	C. E.
Berg, John,	*Madison,*	C. E.
Biegler, Philip Sheridan,	*Chicago, Ill.,*	E. E.
Blaine, Joseph Robert Smith,	*Milwaukee,*	M. E.
Blossey, Albert Roderick,	*Cadott,*	M. E.
Bolles, Edgar James,	*Madison,*	E. E.
Borchert, Ernest, Jr.,	*Milwaukee,*	M. E

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Boynton, John Edson,	*Jerseyville, Ill.,*	M. E.
Bradshaw, John Ward, Jr.,	*Superior,*	E. E.
Brennan, Bernard Conrad,	*Cato,*	C. E.
Brenton, Charles Elmer,	*Madison,*	E. E.
Brown, Charles Eugene,	*Sheldon, Iowa,*	C. E.
Brown, William Edwin,	*Racine,*	C. E.
Bull, Eyvind Hagerup,	*Madison,*	C. E.
Burke, Thomas James,	*Winona, Minn.,*	C. E.
Burling, Lancaster Demorest,	*Madison,*	G. E.
Burnett, Earle Smead,	*Madison,*	M. E.
Casserly James Felix,	*Madison,*	E. E.
Colburn, Avery Reeves,	*Highland Park, Ill.,*	E. E.
Cole, Herbert Spencer,	*La Crosse,*	C. E.
Conrad, Nicholas John,	*Port Washington,*	E. E.
Craigo, Ralph Thurman,	*Monroe,*	G. E.
Cratty, Paul Jones,	*Oak Park, Ill.,*	E. E.
Cronk, Forbes Bismark,	*Madison,*	C. E.
Derge, Matt Louis,	*Eau Claire,*	E. E.
Dorner, Frederick Harry,	*Milwaukee,*	M. E.
Duckett, Walter Elmer,	*Burlington,*	C. E.
Edwards, Evan Cadwallader,	*Appleton,*	C. E.
Elmore, Samuel Eltinge,	*Milwaukee,*	M. E.
Falconer, Donald Patton,	*Corry, Pa.,*	C. E.
Fisher, Carey Carlton,	*Paw Paw, Ill.,*	E. E.
Gates, Howard Babcock,	*Milton Junction,*	C. E.
Gauger, John Charles,	*Manitowoc,*	C. E.
Gierow, Otto Albert,	*Chilton,*	E. E.
Gold, Sol,	*Philadelphia, Pa.,*	C. E.
Graham, Guy Alexander,	*Reedsburg,*	C. E.
Grant, Robert Lawrence,	*Milwaukee,*	G. E.
Haertel, Carl Frederick,	*Madison,*	E. E.
Haley, George Henry,	*Watertown, N. Y.,*	C. E.
Hanson, Charles Andrew,	*Racine,*	E. E.
Harlacher, Lloyd Ralph,	*Madison,*	C. E.
Harvey, William Riley,	*Madison,*	E. E.
Haukinson, Ray Lyton,	*Evansville,*	G. E.
Hawkins, Lewis Wood,	*Waukegan, Ill.,*	G. E.
Hawley, Edward Joseph,	*Green Bay,*	G. E.
Hejda, Cnarles William,	*Manitowoc,*	E. E.
Helmholz, Arthur William,	*Madison,*	E. E.
Helzer, Arthur Edmund,	*Madison,*	E. E.
Heston, Charles Elisha,	*Madison,*	E. E.

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Hoefer, Chester Arthur,	*Freeport, Ill.,*	M. E.
Hoefer, Elmer George,	*Freeport, Ill.,*	M. E.
Hofman, Lothar,	*Ft. Wayne, Ind.,*	G. E.
Holt, V. Robert,	*Poynette,*	E. E.
Hosig, Irwin Benjamin,	*Hartford,*	C. E.
Howland, Marvin Wyatt,	*Madison,*	C. E.
Hoyt, Ray Stevens,	*Bellevue, Neb.,*	E. E.
Inbusch, Herbert Stark,	*Milwaukee,*	E. E.
Inbusch, Walter Henry,	*Milwaukee,*	E. E.
Irving, Thomas Joseph,	*Watertown,*	C. E.
Jacobs, Ernest R.,	*Aurora, Ill.,*	E. E.
Jones, Richard,	*Waukesha,*	E. E.
Jones, William Nelson,	*Madison,*	C. E.
Kayser, Edward Matthew,	*Green Bay,*	C. E.
King, Max Werner,	*Madison,*	C. E.
Kunz, William Harry,	*Freeport, Ill.,*	C. E.
Larsen, Albert,	*Milwaukee,*	M. E.
Legried, Herman Nicholas.	*Stoughton,*	E. E.
MacMillan, Harold St. Clair,	*Wauwatosa,*	M. E.
Mann, Franklin Harvey,	*Shullsburg,*	C. E.
Marks, Frederick Robert	*Chicago, Ill.,*	E. E.
McMullen, Vincent,	*Dodgeville,*	E. E.
McWethy, Frank Henry,	*Aurora, Ill.,*	M. E.
Meyer, Adolph Frederick,	*Cedarburg,*	C. E.
Millar, William John,	*Milwaukee,*	C. E.
Miller, Arthur Herbert,	*West Salem,*	M. E.
Mitchell, Henry Zehring,	*St. Cloud, Minn.,*	G. E.
Moles, Edward Snetting,	*Madison,*	E. E.
Morgan, Walter Daniel,	*Reedsburg,*	G. E.
Morrissey, Patrick William.	*Mauston,*	M. E.
Muir, Roy Cummings,	*Arcadia,*	E. E.
O'Brien, Leo Lewellyn,	*Sparta,*	E. E.
Olsen, Rossie Guy,	*Arcadia,*	E. E.
Olson, Harry Marinius,	*Madison,*	E. E.
Orbert, Edwin Gray,	*Green Bay,*	C. E.
Peotter, Reuben Sylvester,	*Appleton,*	C. E.
Perkins, Willis Drummond,	*La Crosse,*	E. E.
Peterson, Henry William,	*Waldo,*	C. E.
Potts, Frederick Andrew,	*Waupaca,*	C. E.
Price, John Reese,	*Cambria,*	E. E.
Purple, Cullen Dean,	*Galesville,*	C. E.
Ramstad, Albert George,	*Eau Claire,*	E. E.

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Reed, Carl Sweetland,	*Canandaigua, N. Y.,*	M. E.
Richardson, Walter Hawley,	*Milwaukee,*	M. E.
Rice, Leverett Ernest,	*Madison,*	E. E.
Robinson, Ray Fiske,	*Superior,*	E. E.
Rodenbaeck, George Albrecht,	*New Holstein,*	E. E.
Rogers, Paul Boleyn,	*Milwaukee,*	G. E.
Rood, Charles Mackay,	*Reedsburg,*	M. E.
Russell, Weber Sands,	*La Crosse,*	M. E.
Sawyer, Walter Percy,	*Waukesha,*	C. E.
Schattschneider, Sylvester,	*DeForest,*	C. E.
Schmidley, William Robert,	*Janesville,*	E. E.
Schmidt, William Frederick,	*Manitowoc,*	E. E.
Seyton, Harry J.,	*Madison,*	C. E.
Sherron, Frank James,	*Monroe,*	M. E.
Simmons, George Matthews,	*Viola,*	E. E.
Sinz, Edward Frederick,	*Johnsonville,*	C. E.
Snow, William Mathew,	*Mineral Point,*	G. E.
Steenson, Burt Edward,	*Whitewater,*	E. E.
Swan, George Dempster,	*Clinton,*	E. E.
Terhorst, Harvey,	*Milwaukee,*	E. E.
Thon, George Louis,	*Aurora, Ill.,*	C. E.
Tubesing, William Fred,	*Milwaukee,*	C. E.
Turner, Paul Boynton,	*Stoughton,*	E. E.
Ungrodt, Geo. Frederick William,	*Medford,*	E. E.
Vinson, Albert Wilkinson,	*Milwaukee,*	M. E.
Wagle, Oswal Olson,	*Madison,*	E. E.
Wagner, Raymond Taber,	*Dubuque, Iowa,*	E. E.
Walter, Roscoe George,	*Mazomanie,*	C. E.
Ward, Hugh Charles,	*Madison,*	E. E.
Watkins, Charles Albert,	*Chicago, Ill.,*	E. E.
Weld, Harold Kenneth,	*Elgin, Ill.,*	G. E.
Wescott, Milton Benham,	*Shawano,*	G. E.
Wharry, Major Earl,	*Elkhorn,*	M. E.
Wheeler, William Sprague,	*Chicago, Ill.,*	M. E.
Whinery, Ralph Harper,	*Marshalltown, Iowa,*	C. E.
White, Fred Grant,	*Waterloo,*	E. E.
Whyman, Robert Horatio,	*Madison,*	M. E.
Willison, Charles Donald,	*Fennimore,*	E. E.
Wray, Edward,	*Janesville,*	E. E.
Wulfing, Harry Eugene,	*Madison,*	E. E.
Ziegeweid, Anton Basil,	*Arcadia,*	C. E.
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SOPHOMORE CLASS.

Allen, Maynard Edward,	*Indianapolis, Ind.,*	C. E.
Arnold, Harry Earle,	*Lake Geneva,*	E. E.
Baldwin, William Gage,	*Sparta,*	M. E.
Balsom, John James,	*Hudson,*	E. E.
Bates, William Ensign,	*Madison,*	C. E.
Bayne, Robert Royden,	*Warren, Ill.,*	M. E.
Bell, Walter Mortimore,	*Hudson,*	M. E.
Bennett, Edward Lutley,	*Black Earth,*	C. E.
Bertke, Wilson Arthur,	*Milwaukee,*	E. E.
Beye, Cudworth,	*Oak Park, Ill.,*	M. E.
Biersach, Rudolph,	*Milwaukee,*	M. E.
Bingham, James Baldwin,	*Madison,*	C. E.
Blackburn, Fred M.,	*Verona,*	E. E.
Blatz, John,	*Milwaukee,*	C. E.
Bodenbach, Max Nicholas,	*Milwaukee,*	E. E.
Brewer, Paul James,	*Mineral Point,*	E. E.
Brown, Edwin Stanton,	*Indianapolis, Ind.,*	C. E.
Burling, Beverly Burdette,	*Madison,*	E. E.
Bush, James Irving,	*Racine,*	M. E.
Bushby, William,	*Shullsburg,*	C. E.
Byers, Vernon Clyde,	*Madison,*	E. E.
Cade, Orpheus Blaine,	*Viroqua,*	E. E.
Calvin, Carl,	*Lancaster,*	C. E.
Carey, Edward Thomas,	*Clinton, Iowa,*	C. E.
Claridge, Joshua,	*Reedsburg,*	C. E.
Concklin, Bert Morse,	*Milwaukee,*	C. E.
Conway, William Malcolm,	*Argyle,*	C. E.
Curtin, James Hugh,	*Madison,*	C. E.
Daniels, John Albert Randolph,	*Freeport, Ill.,*	C. E.
Dapprich, Carl Emil Louis,	*Chicago, Ill.,*	E. E.
Davidson, Paul Edward,	*Green Bay,*	E. E.
Davis, Ralph Emerson,	*Des Moines, Iowa,*	G. E.
Delgado, Alan Edgar,	*Kingston, Jamaica,*	E. E.
Delgado, Altamont,	*Kingston, Jamaica,*	E. E.
Dodson, Truman Monroe,	*Berlin,*	G. E.
Dunlap, Guy Lewis,	*Mazomanie,*	C. E.
Eskuche, Oscar Arthur,	*Milwaukee,*	M. E.
Falk, Harold Sands,	*Milwaukee,*	E. E.
Fisher, Frank Eugene,	*Madison,*	E. E.
Flagg, William Henry,	*Kaukauna,*	E. E.
Flickinger, Floyd Spangler,	*Council Bluffs, Iowa,*	E. E.

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German, Henry Louis,	*Brackett,*	C. E.
Gormley, John Henry,	*Ft. Atkinson,*	C. E.
Grueningen, Gustave von,	*Sauk City,*	E. E.
Gutenkunst, Hugo Arthur,	*Milwaukee,*	M. E.
Hall, Benjamin Frank,	*Wood Lake, Minn.,*	E. E.
Hande, John Hallward,	*Eau Claire,*	E. E.
Hannahs, Lynn Thomas,	*Kenosha,*	M. E.
Hardacker, Raymond James,	*Appleton,*	E. E.
Harrop, James Lawrence,	*Fond du Lac,*	C. E.
Heller, Harry Leopold,	*Milwaukee,*	M. E.
Henderson, Alonzo Ray,	*Mayville,*	C. E.
Henry, Otto Raymond,	*Viroqua,*	C. E.
Hess, George Bailey,	*Racine,*	M. E.
Hillyer, Raymond Hobart,	*Merrill,*	E. E.
Hinrichs, Charles Ott,	*Milwaukee,*	E. E.
Hoefer, Alfred Ulysses,	*Freeport, Ill.,*	M. E.
Hoelz, John Bernhard,	*Burlington,*	E. E.
Hood, William Frederick, Jr.,	*Fairchild,*	C. E.
Howson, Elmer Thomas,	*Clinton, Iowa,*	C. E.
Hull, Irving Weslie,	*Antigo,*	E. E.
Hunt, Henry James,	*Stoughton,*	C. E.
Hurley, John Dennis,	*New London,*	C. E.
Jacobson, Jesse Ernst,	*Clinton Junction,*	E. E.
Jenista, George John,	*Frankville,*	E. E.
Johnson, Arden Richard,	*Stoughton,*	E. E.
Johnson, Frederick May,	*Tunnel City,*	C. E.
Johnson, Guy Maxwell,	*West Salem,*	M. E.
Johnson, Olaf Benjamin,	*Chicago, Ill.,*	M. E.
Johnson, Soren William,	*Waupaca,*	E. E.
Kearney, Edgar,	*Springfield, Mo.,*	M. E.
Kelly, Thomas Francis,	*Milwaukee,*	E. E.
Kennedy, Frank Albert,	*Merrill,*	C. E.
Keyes, Dudley Hyde,	*Madison,*	E. E.
Klingholz, Carl Oscar,	*Manitowoc,*	E. E.
Koenig, Remus,	*Two Rivers,*	M. E.
Kohn, Alvin John,	*Reeseville,*	E. E.
Kommers, Jesse Benjamin,	*Sheboygan,*	E. E.
Kowalke, Otto Louis,	*South Kaukauna,*	M. E.
Kuehmsted, Hugo Alfred,	*Appleton,*	E. E.
Kuehns, Romano Benvenuto,	*Milwaukee,*	M. E.
Lacher, Walter Scott,	*Waukesha,*	C. E.
LaDow, Carl Vernon,	*Sandusky, O.,*	M. E.

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LaRoy, Herbert Arthur,	*Waukesha,*	C. E.
Larson, James Herbert,	*Milwaukee,*	M. E.
LaRue, George Andrew,	*Reedsburg,*	E. E.
Latta, Warren Hartshorn,	*Clinton,*	M. E.
Laurence, Douglas Howard,	*Sterling, Ill.,*	G. E.
Lawrence, Francis Walcott,	*Sheboygan,*	C. E.
Lawrence, Frank Henry,	*Lake Geneva,*	E. E.
Leasman, Emil Leo,	*Boscobel,*	M. E.
Libby, Lawrence Moses,	*New Richmond,*	E. E.
Lohneis, George Henry,	*Sun Prairie,*	M. E.
Long, Sydney Simon,	*Mason City, Iowa,*	C. E.
Lucas, Thomas Joseph,	*Madison,*	E. E.
Luick, Adolph James,	*Milwaukee,*	M. E.
Lynch, Raymond Michael,	*Cedarburg,*	M. E.
Manchester, Thomas Harris,	*Milwaukee,*	M. E.
Manegold, Robert Albert,	*Milwaukee,*	M. E.
McCoy, Lloyd Baxter,	*Milwaukee,*	E. E.
McCready, Wallace,	*Spring Green,*	C. E.
Mead, Warren Judson,	*Plymouth,*	E. E.
Meadowcroft, Miner T.,	*Poynette,*	C. E.
Meloy, Charles Thomas,	*Shullsburg,*	C. E.
Middleton, Owen William,	*Berlin,*	M. E.
Miller, Ernest Baldwin,	*Westminster, Md.,*	E. E.
Moser, Albert Leo Brecht,	*Cripple Creek, Colo.,*	C. E.
Murphy, James Foster,	*Quebec, Canada,*	C. E.
Newcomb, Clyde Eugene,	*Madison,*	E. E.
Noe, Edgar James,	*Madison,*	E. E.
Orton, Frank S.,	*Lancaster,*	C. E.
Osborne, Clyde Elmer,	*Indianapolis, Ind.,*	C. E.
Parker, Frank Ingram,	*Mondovi,*	E. E.
Parker, Howard Ashley,	*Evansville,*	C. E.
Parker, Wilfred Cedric,	*Milwaukee,*	C. E.
Pease, Bernard Snell,	*Richland Center,*	C. E.
Peck, Bertine Hila,	*Berlin,*	E. E.
Porter, Julian Clarke,	*Menomonie,*	M. E.
Pratt, Clarence Harding,	*Beloit,*	C. E.
Rath, William Charles,	*Appleton,*	C. E.
Read, Benjamin Killey,	*Lake Geneva,*	M. E.
Reid, John Winfield,	*Oconomowoc,*	C. E.
Reineking, Victor Herman,	*Milwaukee,*	C. E.
Reynolds, Ira Lambert,	*Mineral Point,*	E. E.

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Richards, Carl,	*Platteville,*	M. E.
Ripley, Russell Rosier,	*Oakfield,*	M. E.
Robertson, Lawrence Bernard,	*Ft. Atkinson,*	M. E.
Robinson, Benjamin Aldrich,	*Kenosha,*	C. E.
Robinson, Joseph Almanzo,	*Iron Mountain, Mich.,*	M. E.
Robinson, William Humphrey,	*Berlin,*	C. E.
Roemer, Richard Quirin,	*Manitowoc,*	M. E.
Rosier, Frank Burdette,	*Rubicon,*	E. E.
Rossing, Adolph Hjalmar,	*Argyle,*	G. E.
Rossiter, Ernest,	*Appleton,*	E. E.
Rowe, Wilfred,	*Eau Claire,*	C. E.
Sackett, Walter Hobart,	*Berlin,*	C. E.
Saubert, Henry Michael,	*South Kaukauna,*	M. E.
Sawyer, Henry P.,	*Chicago, Ill.,*	G. E.
Scheuer, Charles Henry,	*Mishicot,*	C. E.
Schumacher, Arthur Henry,	*Delavan,*	M. E.
Selbie, Charles Chadion,	*Deadwood, S. D.,*	G. E.
Severin, Max Charles,	*Fond du Lac,*	E. E.
Severson, Stephen Benjamin,	*Stoughton,*	E. E.
Shadbolt, Loomis James,	*Sheboygan,*	E. E.
Sheets, Harry Alvin,	*Milwaukee,*	M. E.
Shipman, Burt Uzal,	*Beaver Dam,*	C. E.
Smith, Lloyd Raymond,	*Milwaukee,*	M. E.
Sorem, Alfred Julius,	*Moose Lake, Minn.,*	M. E.
Spetman, Erwin Ehrig,	*Council Bluffs, Iowa,*	C. E.
Stock, Harry,	*Madison,*	C. E.
Strait, Edward Nathan,	*Sparta,*	E. E.
Sustins, Walter Otis,	*Stevens Point,*	E. E.
Tarr, John Cecil,	*Auburn,*	E. E.
Terhorst, Steven,	*Milwaukee,*	E. E.
Thorn, Jent George,	*Clinton, Iowa,*	C. E.
Uihlein, Oscar Louis,	*Milwaukee,*	E. E.
Van Meter, Thomas Earl,	*Brodhead,*	C. E.
Vroman, John Charles,	*Chicago, Ill.,*	E. E.
Wachtman, Edmund Louis Chas.	*Oldham, S. D.,*	M. E.
Ward, Harry Irvin,	*Madison,*	E. E.
Ward, Louis Edward,	*Ft. Atkinson,*	E. E.
Warren, Edgar Wyman,	*Stoughton,*	E. E.
Wetzler, William Henry,	*Beloit,*	C. E.
Wheeler, Roy Alvah,	*Milwaukee,*	E. E.
Whelan, Thomas C.,	*Chippewa Falls,*	E. E.
Whiteside, Samuel Porter,	*Bell Buckle, Tenn.,*	M. E.

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Wigman, James Bernard,	*Green Bay,*	M. E.
Wilson, Ira Jay,	*Ripon,*	E. E.
Winger, Carl,	*Grand Rapids,*	M. E.
Youngblutt, Frederick Carl,	*Middleton,*	C. E.
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FRESHMAN CLASS.

Adams, Roger Melvin,	*Dunbar.*
Anderson, Ole Andreas,	*Hawley, Minn.*
Anderson, Peter Melvin,	*Mt. Horeb.*
Anderson, Rolf Bull,	*Madison.*
Arndt, Reuben Field,	*DePere.*
Arnold, Douglas Luther,	*Sharon.*
Bandli, Edward Michell,	*Rice Lake.*
Barrett, Leonard George,	*Cudahy.*
Bates, Edward,	*Anamosa, Iowa.*
Beasley, Phineas Welles,	*Marshalltown, Iowa.*
Bechaud, Jean Pierre,	*Jefferson.*
Bechlem, Alfred William,	*Plymouth.*
Becker, Louis Carl,	*Belen, N. M.*
Benedict, Guy Albert,	*Oshkosh.*
Bennett, Benjamin Franklin,	*Madison.*
Bennett, Vivian Andrews,	*Baltimore, Md.*
Berto, James Andrew,	*Amherst.*
Bigelow, Charles Miller,	*Milwaukee.*
Blakesbee, Evartes Haskins,	*Lake Geneva.*
Bleuel, Alexander Hugo,	*Milwaukee.*
Bleyer, Charles Faben,	*Milwaukee.*
Bloy, Albert Emil,	*Hilbert.*
Bock, John George,	*Manitowoc.*
Bollinger, Frank Ernest,	*Sharon.*
Bosshard, John,	*Bangor.*
Breckey, Erick T.,	*Madison.*
Brown, Robert Pedelupe,	*Berlin.*
Browne, Clarence Swain,	*Las Vegas, N. M.*
Buchecker, Albert Israel,	*Java, S. D.*
Cahill, William Robert,	*Chicago, Ill.*
Carey, Alfred Blake,	*Wild Rose.*
Challoner, George,	*Oshkosh.*
Chapman, Louis Leon,	*Milwaukee.*
Claridge, George,	*Reedsburg.*
Clark, Stewart Lambert,	*Milwaukee.*
Cleary, John Edward,	*Antigo.*

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Cogswell, Robert William,	*Madison.*
Collins, Stephen William,	*Rock Island, Ill.*
Cook, James Knight,	*Madison.*
Cutler, Manuel,	*Dodgeville.*
Dampman, Harry Roscoe,	*Point Pleasant, N. J.*
Darlington, Frank George,	*Milwaukee.*
Dean, Joseph Edward,	*Milwaukee.*
Dearborne, Harold Lorenzo,	*Janesville.*
Dennis, Thomas Henry,	*Merrill.*
Derge, Ferdinand Julius,	*Eau Claire.*
Diehl, Alfred Samuel	*Perry.*
Diestler, Gilbert Albert,	*Hortonville.*
Dillon, Carl Duncan,	*Madison.*
Doll, Edward,	*Milwaukee.*
Donohue, Jerry, Jr.,	*Sheboygan.*
Douville, Harry Edward,	*West Allis.*
Downie, George Thomas,	*Merrill.*
Doyle, Michael Mary,	*Milwaukee.*
Draper, George Lester,	*Cleveland, Ohio.*
Droege, Henry August,	*Eau Claire.*
Dugan, David Hesba,	*Milwaukee.*
Dulaney, Arthur Sim,	*Baltimore, Md.*
Dusenberry, Raymond Eugene,	*Green Bay.*
Dyer, Charles Thomas,	*South Milwaukee.*
Eagle, Celestine Clement,	*Union Center.*
Eastman, Morgan Leonard,	*Marinette.*
Ebert, Fred Charles,	*Tomah.*
Edmunds, Charles Edward,	*Fond du Lac.*
Elliot, Byron Hogle,	*Chicago, Ill.*
Erdmann, Earl Edwin,	*Big Suamico.*
Erickson, Joshua Seaverns,	*Chicago, Ill.*
Ernst, Hugo Charles,	*Chicago, Ill.*
Estberg, Howard Claes,	*Waukesha.*
Estee, Rush Gillan,	*Milwaukee.*
Evans, Bertrand,	*Spring Green.*
Feige, Heinrich,	*Schweidnetz, Germany.*
Fertig, Clarence Hiram,	*Milwaukee.*
Field, Guy Alden,	*Sharon.*
Fisher, Arthur Augustus,	*Beaver Dam.*
Fleischer, Henry Bernhard,	*Milwaukee.*
Foss, Glenn Arthur,	*Tomahawk.*
Fowler, Herbert Atherton,	*Madison.*

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Freeman, William James,	*Horicon.*
French, Chester Frank,	*Madison.*
Freschl, William Walter,	*Milwaukee.*
Fries, Scott Winters,	*Richland Center.*
Frost, Frank Sumner,	*Union.*
Gaarden, Oscar H.,	*Spring Valley.*
Gallup, Rockwell Loring,	*Denver, Colo.*
Garner, Harrison Levi,	*Lancaster.*
Gass, Otto,	*Manitowoc.*
Gattiker, Willis Alfred,	*Baraboo.*
Gelbach, Warren Allen,	*Lancaster.*
Getts, Herbert Ernest,	*La Crosse.*
Gielow, Edwin Herman,	*Manitowoc.*
Gillan, Silas Lee,	*Milwaukee.*
Glab, William Nicholas,	*Dubuque, Iowa.*
Goedjen, Albert John,	*Manitowoc.*
Gray, Harry Leon,	*Mazomanie.*
Green, Charles William,	*Chicago, Ill.*
Greisen, Elijah Charles,	*Sturgeon Bay.*
Gross, Edward Lascar,	*Milwaukee.*
Gruenhagen, Richard Elmer,	*Oshkosh.*
Grunert, Arthur Earl,	*Chicago, Ill.*
Gugler, Hans Herbert,	*Milwaukee.*
Hall, Charles Norton,	*Madison.*
Hanquet, Louis Charles,	*Oconto.*
Harley, William Sylvester,	*Neillsville.*
Hart, Bert Edgar,	*Milwaukee.*
Hatch, Charles Louis,	*Beloit.*
Hauser, John Edward,	*Beloit.*
Heebink, Garret Egbert,	*Baldwin.*
Henriques, Abraham Nunes,	*Kingston, Jamaica.*
Heyroth, Albert Herman,	*Manitowoc.*
Hibbard, Allen Charles,	*Milwaukee.*
Higson, Charles Roy,	*Salt Lake City, Utah.*
House, Edwin,	*Elkhorn.*
Hine, Willard Foster,	*Fairchild.*
Hinsch, Van Buren,	*Davenport, Iowa.*
Hirschberg, Ernest Samuel,	*Milwaukee.*
Holt, Thomas,	*Green Bay.*
Hosler, Harry,	*Reedsburg.*
Howitt, Harvey Matthew,	*Pewaukee.*
Hubbard, Edwin Palmer,	*Milwaukee.*

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Hunter, Francis Robert,	*Racine.*
Ives, George,	*Ft. Atkinson.*
Jackson, Charles Proctor,	*DePere.*
Jackson, Manley Spencer,	*La Crosse.*
Janssen, Walter Arion,	*Davenport, Iowa.*
Jewell, Edgar Wickwire,	*Oshkosh.*
Johnson, Paul Browning,	*Madison.*
Jones, George Wright,	*Manitowoc.*
Kachel, William Frederick,	*Baraboo.*
Kalmback, Maurice Frederick,	*Sturgeon Bay.*
Kalvestran, Lars Alfred Marion,	*Avalanche.*
Kartack, Roy Ernest,	*Baraboo.*
Kaub, Verne Paul,	*Madison.*
Kavel, Harry William,	*Milwaukee.*
Keator, Clark Leffingwell,	*Moline, Ill.*
Kehr, Carl Merriman,	*Sterling, Ill.*
Keller, Arthur Edwin,	*Spring Green.*
Kemler, Truman Douglas,	*Platteville.*
Kershaw, George D.,	*Wauwatosa.*
Ketchum, Harold Edwin,	*Madison.*
Ketchum, Wesley Merritt,	*Racine.*
Keveney, Thomas Sylvester,	*Brooklyn, N. Y.*
Kifer, Edwin Henry,	*Spring Green.*
Kimball, Frank William,	*Janesville.*
Kirkpatrick, Leon Elmer,	*Brodhead.*
Kirkpatrick, Woodward Cummings,	*Superior.*
Klug, John Frederick,	*Arcadia.*
Knudson, Louis,	*Superior.*
Knuth, Tony Byron,	*Fairchild.*
Kortebein, Hugo William,	*Milwaukee.*
Kruse, Harry,	*Freeport, Ill.*
Kryzinski, Antony Jacob,	*Milwaukee.*
Kuhlman, Howard Wilson,	*Madison.*
Lehmann, Leo Otto,	*Green Bay.*
Leslie, John Woodworth,	*Chicago, Ill.*
Leissmann, William Alexander,	*Reedsburg.*
Loesch, Richard Llewellyn,	*Chicago, Ill.*
Lieber, William Henry,	*Milwaukee.*
Lorenz, Ira Sherburn,	*Milwaukee.*
Lowe, Edgar Allen,	*Plat.*
Lueders, Walter John,	*Chicago, Ill.*
Lutze, Henry Fred,	*Sheboygan.*

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Lyman, Irvine Rinehard,	*Eau Claire.*
Macumber, Karl Hill,	*Beloit.*
Mainland, John,	*Racine.*
Manegold Frank William John,	*Milwaukee.*
McCloud, Bert,	*Fox Lake.*
McComb, Ross Kenneth,	*Brillion.*
McCoy, Arthur Guy,	*Marsland, Neb.*
McLeod, Roderick Carlyle,	*Milwaukee.*
McLain, Daniel Joseph,	*Yankton, S. D.*
McLean, Harry C.,	*West Superior.*
McMullen, Cornelius,	*Dodgeville.*
Merlo, Donnie,	*Bangor.*
Meyers, Don Clyde,	*Abbottsford.*
Miller, Daniel Webster,	*Somers.*
Miller, Frank Edward,	*Milwaukee.*
Milliren, Barton Leroy,	*Pepin.*
Millman, Samuel Raymer,	*Monroe.*
Mills, John McCuen,	*Milwaukee.*
Moore, Charles Gilbert,	*Eau Claire.*
Morton, James Duncan,	*Whitewater.*
Munn, Edward Franklin,	*Wausau.*
Naset, Wilhelm Otto,	*Bloomer.*
Nelson, Edward James,	*Fennimore.*
Nevins, Blake Reynolds,	*Winona, Minn.*
Newcomb, Maron Watson,	*Pine River.*
Newcomb, Morton Mayne,	*Pine River.*
Newton, Frank Arthur,	*Sparta.*
Newton, George Cheney,	*Milwaukee.*
Niven, Robert Marcus,	*Sheridan.*
Norberg, Bruno Victor Edward,	*Milwaukee.*
Nye, Mark Sparling,	*West Salem.*
Oaks, Ray Clinton,	*Omro.*
Oestreich, William Charles,	*Kewaunee.*
Olson, Engwall,	*Marinette.*
Olson, Norman T.,	*Tomahawk.*
Paesler, Fred Edward,	*Chicago, Ill.*
Palmer, Edward Albert,	*Janesville.*
Palmer, Guy Hageman,	*Sparta.*
Pankow, Theodore John,	*Marshfield.*
Parker, Eustace Edwin,	*Evansville.*
Penn, William Clay,	*Juda.*
Peters, Herbert,	*Sharon.*

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Peterson, Harry Sigfrid,	*Ishpeming, Mich.*
Peterson, Raymond Laurence,	*Amherst.*
Pfannstiehl, Jean Jaques,	*Baraboo.*
Pole, James Sinclair,	*Chicago, Ill.*
Pool, Lyman Ware,	*Ashland.*
Porter, Harry Allen,	*Mukwonago.*
Powell, David Alva,	*Black Earth.*
Pulver, Harry E.,	*Viroqua.*
Rabe, Henry Albert,	*Neenah.*
Reinhard, Louis Ferdinand,	*Milwaukee.*
Reuter, Jackson John,	*Sun Prairie.*
Reynolds, Preston Alfred,	*Madison.*
Rhodes, George Wallace,	*Galesville.*
Richter, Edward Rand,	*Milwaukee.*
Robbins, Arthur,	*Burlington.*
Roberts, John Archibald,	*Columbus.*
Robertson, Andrew,	*Milwaukee.*
Robinson, Irvin E.,	*Baraboo.*
Rohow, Grover Paul,	*Ashland.*
Ryan, Wm. Henry,	*Janesville.*
Ryder, Gana Gustavus,	*Fond du Lac.*
Ryder, Gilbert Emory,	*Sandwich, Ill.*
Sackett, Homer Charles,	*Phillips.*
Sage, Robert Henry,	*Delavan.*
Sanford, Herbert Brooks,	*Tallapoosa, Ga.*
Sargent, Julian Downing,	*Milwaukee.*
Schaefer, Harry,	*Davenport, Iowa.*
Schamell, Otto Alfred,	*Milwaukee.*
Schobinger, William Michael,	*Shullsburg.*
Schodron, John George,	*Milwaukee.*
Schroeder, Erwin Henry Robert,	*Milwaukee.*
Schroeder, Frank Charles,	*Philadelphia, Pa.*
Sears, Louis Charles,	*Milwaukee.*
Semple, James Renwick.	*Hudson.*
Shanks, William Alexander,	*Portage.*
Sherman, Lewis, Jr.,	*Milwaukee.*
Shoop, Roy Bassett,	*Madison.*
Simpson, James Frederic,	*Chicago, Ill.*
Slinde, Arthur Christian,	*DeForest.*
Smith, Andy John,	*Brandon.*
Smith, Orrin Cheney,	*Clinton.*
Smith, Rodney Hiram,	*Freeport, Ill.*

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Solsrud, Hilman,	*Whitehall.*
Sommer, Alfred,	*Sheboygan.*
Spencer, Emory Waldo,	*Milwaukee.*
Stearns, Edward Wording,	*Chicago, Ill.*
Stearns, James Henry,	*Sheboygan.*
Steenrod, Terrill Finney,	*Freeport, Ill.*
Stoelting, Roland Emil,	*Oconto.*
Sutherland, Ross,	*Janesville.*
Sweaton, Charles Alexander,	*Whitewater.*
Swenson, Victor,	*Madison.*
Teschan, Walter Frohsinn,	*Milwaukee.*
Thayer, Benjamin Single,	*Ripon.*
Thiel, Bruno Carl,	*Milwaukee.*
Thompson, Isaac Thorbus,	*Blair.*
Thompson, Louis Mark,	*Spokane, Wash.*
Thompson, Percy Ball,	*Spokane, Wash.*
Vance, Albert Dunbar,	*Decorah, Iowa.*
Van Horne, Columbus Cummings,	*Jerseyville, Ill.*
Van Patten, John Frederick,	*Evansville.*
Vivian, Oscar,	*Mineral Point.*
Voboril, Joseph Vincent,	*Manitowoc.*
Wagner, George Ernest,	*Fond du Lac.*
Waite, Edwin,	*Brooklyn.*
Walker, Clarence George,	*Berlin.*
Walser, Edward William,	*Chicago, Ill.*
Walsh, Arthur Jeremiah,	*Deer Park.*
Warner, Frank Melville,	*Fountain City.*
Watson, Roy Stuart,	*Milwaukee.*
Wehausen, George Washington,	*La Crosse.*
Wessel, Frederick Charles Ernest,	*Milwaukee.*
West, Maurice Edgar,	*Elkhorn.*
Wetlaufer, Erwin Hudson,	*Oshkosh.*
Whitcomb, Walter James,	*Monroe.*
White, Charles Harold,	*Moline, Ill.*
Whitmore, Joseph Bond,	*Mukwonago.*
Whitney, Alden Bradford,	*Madison.*
Whyman, Richard Oliver,	*Aurora, Ill.*
Wied, John Clifford,	*Waupaca.*
Wilber, Charles McCollum,	*Aurora, Ill.*
Williams, Sidney James,	*Milwaukee.*
Willott, Rube Charles,	*Manitowoc.*
Wilson, Lyndon Frederick,	*Ripon.*

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Wilson, Ralph Warren,	*Milwaukee.*
Winkler, William Kneeland,	*Milwaukee,*
Woodruff, Wendell,	*Mondovi.*
Wolff, Julius Fred,	*Cumberland.*
Wright, Colin Wilson, Jr.,	*Monroe.*
Wright, Milton Raleigh,	*New London.*
Wright, Murray Scott,	*Fergus Falls, Minn.*
Wyatt, George Moore,	*Fond du Lac.*
Yewdale, Joseph Ames,	*Milwaukee.*
Zapffe, Carl,	*Milwaukee.*
Zwolank, Joseph,	*Castlerock.*

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SPECIAL STUDENTS.

Almond, Fred Charles,	*Madison,*	E. E.
Andrews, Aden Wright,	*Columbus,*	C. E.
Austin, James Lee,	*Milwaukee,*	E. E.
Balsom, Amos Parker,	*Hudson,*	E. E.
Bennett, William Bryant,	*Madison,*	C. E.
Boone, Charles,	*Warren, Ill.,*	E. E.
Breitkreutz, Emil William,	*Wausau,*	C. E.
Breuning, William Hobart,	*Columbus,*	M. E.
Buchanan, John William,	*Livermore, Iowa,*	C. E.
Burns, Louis Andrew,	*Madison,*	C. E.
Davidson, Jesse Ansalem,	*Bozeman, Mont.,*	E. E.
Drought, Orville Hay,	*Waukesha,*	C. E.
Dyer, George Henry,	*Milwaukee,*	C. E.
Edwards, John Prosser,	*Milwaukee,*	C. E.
Fisher, Carey Carlton,	*Paw Paw, Ill.,*	E. E.
Foster, Dean Edward,	*Preston, Iowa,*	M. E.
Hart, Julian George,	*Gillingham,*	M. E.
Hatter, Clarence Peter,	*Chicago,*	E. E.
Klatte, Alfonzo Julius,	*Milwaukee,*	C. E.
Kunz, Florian Baldwin,	*Mayville,*	C. E.
Long, Fred Alva,	*Davenport, Iowa,*	C. E.
Neef, John Henry,	*Portage,*	C. E.
Orr, Owen Cargill,	*St. Joseph, Mo.,*	C. E.
Perry, Willard Newton,	*Algoma,*	E. E.
Potter, John Church,	*Wauwatosa,*	E. E.
Rickeman, Frederick Henry,	*Racine,*	E. E.
Rockwell, Charlie Adelbert,	*Ft. Atkinson,*	C. E.
Rowley, Warren J.,	*Evansville,*	M. E.
Smith, Walter Edward,	*Janesville,*	C. E.

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Smith, William Hooper,	*Rowland Park, Md.,*	M. E.
Sperry, David Rockwell,	*Batavia, Ill.*	M. E.
Trester, Anthony Matthew,	*Sheboygan,*	C. E.
Thomas, Emerson Edwin,	*Athens, Mich.,*	E. E.
Ware, Vivian Julian,	*Madison,*	E. E.
Washer, Charles,	*Kansas City, Mo.,*	E. E.
Weed, James Murray,	*Madison,*	E. E.
Whitcomb, Edwin Reynolds,	*Milwaukee,*	C. E.
Wilcox, Edwin McArthur,	*Ft. Atkinson,*	E. E.
Wood, Charles Llewellyn, Jr.,	*Oshkosh,*	C. E.
Wright, Allen Edgar,	*Perrysburg, N. Y.,*	C. E.

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College of Law.

SENIOR CLASS.

Binzel, Paul Marie,	*Milwaukee.*
Blake, Chauncey Etheridge,	*Rockford, Ill.*
Bradley, Harry Ernest,	*Madison.*
Brooke, William Henry,	*Salem.*
Chase, Albert Guy,	*Madison.*
Davis, Jay Chester,	*Aubrey.*
Davis, Morton Eugene,	*Milton.*
Davis, Robert Moses,	*Madison.*
Earll, John Scott,	*Bear Valley.*
Eberlein, Michael Gustav,	*Showano.*
Erickson, Oscar Gustav,	*Madison.*
Evert, Lewis Magnus,	*Pewaukee.*
Fisher, Clarence Bennett,	*Chicago, Ill.*
Fogg, Joseph Graham,	*Mt. Vernon, Iowa.*
Frost, Walter Archer,	*Mt. Vernon, N. Y.*
Godwin, Cecil Thomas,	*Berlin.*
Green, LeRoy M.,	*Cherry Valley, Ill.*
Guipe, Harry Wilton,	*Chicago, Ill.*
Hayes, Henry Joseph,	*Eden.*
Hintze, Walter Charles,	*Stoughton.*
Lehner, Philip,	*Ackerville.*
Lennon, William Thomas,	*Hurley.*
Lovett, Charles Edward,	*Chilton.*
Marsh, Clarence Henry,	*Milwaukee.*
Masters, Harry John,	*Sparta.*
McCormick, John Aloysius,	*Superior.*
McFarland, James Garfield,	*Dubuque, Iowa.*

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McFarlane, Jay Addison,	*Lodi.*
Mallory, William Bertram,	*Ellendale, N. D.*
Mather, Israel,	*Milwaukee.*
Mills, Claude C.,	*Linden, Iowa.*
Mueller, Arthur August,	*Milwaukee.*
Olbrich, Michael Balthasar,	*Harvard, Ill.*
Phelan, Edward Dennis,	*Sandusky.*
Pickering, Ralph Clair,	*Superior.*
Reitman, Leo,	*Milwaukee.*
Rhodes, Alfred John,	*Galesville.*
Rice, Zelotus Sylvester,	*Sparta.*
Riemer, Robert Fred,	*Cecil.*
Rowan, Henry Charles,	*Reedsburg.*
Ryan, William,	*Lodi.*
Sawyer, John Flynn,	*Chicago, Ill.*
Smith, Charles Francis,	*Milwaukee.*
Smith, William Edward,	*Madison.*
Storms, William Wallace,	*Burlington.*
Strehlow, Max Hugo,	*Bethany Minn.*
Thompson, Charles Sumner,	*Milwaukee.*
Wetzler, Siegfried Fred,	*Milwaukee.*
Woodruff, Frank Elisha,	*Rockford, Ill.*
Yager, Morris Evans,	*Madison.*

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MIDDLE CLASS.

Anderson, Albert,	*North Valley.*
Barry, Hamlet Joseph,	*Denver, Col.*
Bauman, Louis Aloysius,	*Manitowoc.*
Beckington, Ralph Edgar,	*Garden Prairie, Ill.*
Best, Ernest Oscar,	*Baraboo.*
Boyle, Alonzo Cook, Jr.,	*McGregor, Iowa.*
Brown, John Sears,	*Sparta.*
Carpenter, Henry Fayette,	*Janesville.*
Clarke, Ray Willis,	*Milton.*
Corstvet, Alexander Oscar,	*Deerfield.*
Cronk, Victor Doughty,	*Menomonie.*
Culver, William Wellington,	*Stevens Point.*
Detling, John Mathew,	*Sheboygan.*
Foelske, Henry Edward,	*National Home.*
Franzke, John Henry,	*Forest Junction.*
Freeman, Charles Rollin,	*Menomonie.*
Gardner, Harry Irving,	*Grand Rapids.*

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Giffin, Don Eddy,	*Fond du Lac.*
Gilman, Charles Hesler,	*Neillsville.*
Hagenah, William J.,	*Madison.*
Hamilton, William George,	*Marinette.*
Hammersley, Charles Edward,	*Madison.*
Higbee, Jesse Edward,	*La Crosse.*
Hopewell, Oscar Reeves,	*Tekamah, Neb.*
Jaseph, Lynn D.,	*Neillsville.*
Johnson, Harry C.,	*Evansville.*
Kasberg, Alexander,	*Madison.*
Kunny, Charles John,	*Fredonia.*
Landesco, Amada Alexander,	*Milwaukee.*
Leahy, Stephen James,	*Marshfield.*
Leahy, Thomas Edward,	*Platteville.*
Ludlow, Leo de Ruche,	*Waukesha.*
Ludolph, Clarence August,	*Rock Island, Ill.*
Lurvey, Lawson E.,	*Oakfield.*
Mangan, Douglas,	*Milwaukee.*
McGowan, Patrick S.,	*Kewaunee.*
McLees, Charles Erastus,	*Viroqua.*
Miller, John Calkins,	*Marinette.*
Minahan, Eben Roger,	*Green Bay.*
Morgan, Frank Clinton,	*Billings, Mont.*
O'Brien, John Edward,	*Eden.*
Palmer, Thomas Joseph,	*Milton.*
Pullen, Lloyd Winston,	*Milwaukee.*
Roethke, Adolph Herman,	*Chilton.*
Rogers, Chester Garfield,	*Stevens Point.*
Rogers, Frank Norton,	*Ft. Atkinson.*
Rose, Earl Brown,	*Milwaukee.*
Runyard, Eugene Melvyn,	*Antioch, Ill.*
Sargent, Frank Byron,	*Seymour.*
Schanen, William F.,	*Lake Church.*
Schroeder, Baldwin,	*Guttenberg, Iowa.*
Slattery, Reuben Edward,	*Eagle River.*
Slattery, William Charles,	*Eagle River.*
Spiering, Edgar Edmund,	*Mayville.*
Steinmetz, Christian, Jr.,	*Milwaukee.*
Stevenson, Robert George,	*Marinette.*
Stolen, Ole Andrew,	*Mt. Horeb.*
Stone, Charles Harry,	*Reedsburg.*
Trump, Rodger Murphy,	*Milwaukee.*

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Vanderboom, Edward John,	*Marinette.*
Wehe, Waldemar Carl,	*Milwaukee.*
Yates, Frank Edward,	*Washburn.*

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JUNIOR CLASS.

Bogue, Andrew Stevenson,	*Poynette.*
Briere, Charles Edward,	*Grand Rapids.*
Brown, James Augustus,	*Ellsworth.*
Chamberlain Harlem Roy,	*Madison.*
Cuckow, Frederick Walter,	*Dell Rapids, S. D.*
Fahey, Thomas Patrick,	*Hillsboro, Ill.*
Frank, Julius Paul,	*Chicago, Ill.*
Frawley, Thomas Francis,	*Eau Claire.*
Gleason, John Lyman,	*Arcadia.*
Graham, James Blain,	*Roberts.*
Grogan, Stephen Sylvester,	*Milwaukee.*
Hately, Walter Gordon,	*Highland Park, Ill.*
Hedding, Adelbert James,	*Port Washington.*
Hemenway, Joseph Christy,	*Moline, Ill.*
Hinkel, John Samuel,	*Chicago, Ill.*
Huck, Vincent Henry,	*Dotyville.*
Jones, Gad,	*Wild Rose.*
Jones, Thomas Harvey,	*Dousman.*
Jones, Walter B.,	*Waupaca.*
Katerndahl, Richard William,	*Marinette.*
Kemp, Guy Carleton,	*Sault Ste. Marie, Mich.*
Kennedy, Robert Edward,	*Superior.*
Kline, Mark Anthony,	*Milwaukee.*
Kruetzer, Oscar William,	*Wausau.*
Kuechenmeister, Oscar William,	*West Bend.*
Lange, Charles Henry,	*Stevens Point.*
Larish, Frank Ainslie,	*Cincinnati, Ohio.*
Lau, Arnold,	*Cedarburg.*
Ledvina, Lawrence Wencel,	*Kellnersville.*
Lieber, George John,	*Milwaukee.*
Locke, Morris West,	*Oshkosh.*
McConnell, Fred James,	*Monico Junction.*
Miller, Lauritz,	*Yankton, S. D.*
Minton, Robert Parcells,	*Los Angeles, Cal.*
Mullen, Leon Theron,	*Waupun.*
Newberg, Gustave Louis,	*Chicago, Ill.*
Page, Archy Nathan,	*Neillsville.*

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Parks, Howell Albro-Gardiner,	*Oconomowoc.*
Pettit, Arthur William,	*Brandon.*
Price, John,	*Primghar, Iowa.*
Randall, Clifford Ellsworth,	*East Troy.*
Reynolds, Benjamin William,	*Tomah.*
Rhodes, William Thomas,	*Waupun.*
Roach, Rudolph Charles,	*Chicago, Ill.*
Roys, William Bacon,	*Madison.*
Schneider, Walter Carl,	*Kankakee, Ill.*
Seelman, Ernest,	*Milwaukee.*
Segnitz, Herbert,	*Milwaukee.*
Skinner, Arthur George,	*Elgin, Ill.*
Snider, Glen Rust,	*Kilbourn.*
Stewart, Edward Darrow,	*Fargo, N. D.*
Stockton, Charles Murray,	*Faribault, Minn.*
Sullivan, Raymond Ambrose,	*Dubuque, Iowa.*
Tarrell, Lucius Ambrose,	*Darlington.*
Thomas, James E.,	*Nashotah.*
Wagener, William Emil,	*Sturgeon Bay.*
Watson, Ralph Edward,	*Stoughton.*
Winslow, Wirt,	*Ft. Atkinson.*
Wollaeger, John Gustav,	*Milwaukee.*
Wrabetz, Voyta,	*Kewaunee.*
Zeidler, Herbert Louis,	*Lomira.*

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SPECIAL STUDENTS.

Faulk, Carl Fletcher,	*Madison.*
Heinemann, Fred Voelchert,	*Appleton.*
Hull, Harold Lester,	*Montello.*
Fish, Irving Andrews	*Madison.*
Varnum, Nelson Orland,	*Pepin.*

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ADULT SPECIAL STUDENTS.

Bassuener, Otto Adolph,	*Sheboygan Falls.*
Hummel, Emil,	*Waterbury, Conn.*

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STUDENTS IN COLLEGE OF LETTERS AND SCIENCE ELECTING LAW STUDIES.

Carrico, Fred Kilburn,	*Rockford, Ill.*
Cowell, William Albert,	*Kewaunee.*
Eggum, Ole J.,	*Mt. Horeb.*

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Griggs, Victor Rockwell,	*Kewanee, Ill.*
Haseltine, Winfred David,	*Mazomanie.*
Hemingway, Charles Henry,	*Hanover.*
Howley, John Edward,	*Madison.*
Hudson, Farnham Allen,	*Waukegan, Ill.*
Hunt, Fred Ralph,	*Sioux City, Iowa.*
James, James Charles,	*Aurora, Ill.*
Kelling, Max John,	*Milwaukee.*
Kelsey, William Thomas,	*Baraboo.*
Law, David Sydney,	*La Crosse.*
Liver, John Irving,	*Hartford.*
Lord, John Solon,	*Dixon, Ill.*
Mahon, Thomas Joseph,	*Milwaukee.*
Marquissee, Victor Grant,	*Altoona.*
Moe, Maurice Winter,	*Milwaukee.*
Stark, Henry Walter,	*Milwaukee.*
Taylor, Charles Arthur,	*Barron.*
Thiede, Arthur Emil,	*Columbus.*

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College of Agriculture.

LONG COURSE.

Arnold, Gerald Douglas,	*Galesville*	Special 2.
Beckenstrater, Herman,	*Madison,*	Senior.
Brindley, Thaddeus Hayward,	*La Crosse.*	Sophomore.
Burr, Harvey Ray,	*Marshall,*	Freshman.
Cabrera, Benito Beron,	*Entre Rios, Arg. Rep., S. A.,*	Freshman.
Chandler, George McArthur,	*Onaway, Mich.,*	Special 1.
Charles, William Mortimer,	*Madison,*	Freshman.
Cheyney, John Raymond,	*Milwaukee,*	Freshman.
Cooper, Walter Henry,	*Whitewater,*	Freshman.
Davies, Llewellyn Rhys,	*Madison.*	Senior.
DeHaven, Lloyd O.,	*Monroe,*	Freshman.
Delwiche, Edmond Joseph,	*Dykesville,*	Freshman.
Fleischer, Oscar Felix,	*Chicago, Ill.,*	Freshman.
Fowler, Harry King,	*Madison,*	Sophomore.
Fuller, James Garfield,	*Waterman, Ill.,*	Senior.
Gorman, Edward Patrick,	*Wausau,*	Freshman.
Handschin, Walter Frederick,	*Calumetville,*	Freshman.
Hendrickson, Norman,	*Madison,*	Special 4.
Henry, Arnon Taylor,	*Madison,*	Junior.

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Hine, George Shirwood,	*Fairchild,*	Freshman.
Hoffman, Conrad,	*Phillips,*	Sophomore.
Hyslop, Ralph Erskine,	*Whitewater,*	Junior.
Jarnagin, Milton Preston,	*Jefferson City, Tenn.,*	Special 3.
Jarvis, John Demoss,	*La Crosse,*	Junior.
Johnson, Albert Aaron,	*McFarland,*	Freshman.
Jones, Edward Richard,	*Bangor,*	Sophomore.
Jordan, Elbert Lewis,	*Berlin,*	Senior.
Knobel, Fred Henry,	*Madison,*	Senior.
Mahoney, William John,	*Blue Mounds,*	Sophomore.
McLean, Anzi Chapin,	*Eatontown, N. J.,*	Senior.
Meller, Charles Louis,	*Milwaukee,*	Senior.
Milward, James Garfield,	*Madison,*	Freshman.
Murdock, Clayton Ross,	*Brodhead,*	Freshman.
Nelson, Martin,	*Viroqua,*	Junior.
Norris, Arthur John,	*Milwaukee,*	Freshman.
Notz, Mark Charles,	*Watertown,*	Junior.
Page, Guy Fred,	*Berlin,*	Freshman.
Parsons, William Amos,	*Whitewater,*	Special 2.
Ranney, Perry Calvin,	*Elkhorn,*	Junior.
Ringland, Josiah Allen,	*Madison,*	Special 2.
Robinson, Bradbury Norton, Jr.,	*Baraboo,*	Freshman.
Rosenthal, Ernest,	*Oshkosh,*	Freshman.
Schroeder, Christ,	*Kewaunee,*	Sophomore.
Schwartz, Ray Roland,	*Troy Center,*	Junior.
Thompson, David Orrin,	*East Troy,*	Junior.
Thorkelson, Carl Edward,	*Racine Junction,*	Sophomore.
Trautmann, Fred Loraine,	*Whitewater,*	Special 1.
Trowbridge, Edwin,	*Mondovi,*	Sophomore.
Uehling, Otto Louis,	*Richwood,*	Junior.
Vallejo, Carlos Arcadio,	*La Rioja, Arg. Rep.,*	Senior.
Walker, William Bohler,	*Joliet, Ill.,*	Sophomore.
Wallin, Allgot,	*Chicago, Ill.,*	Junior.
Wallin, Oscar King,	*Prairie du Chien,*	Sophomore.
Warren, Bruce George,	*Clintonville,*	Freshman.
Wrieth, John,	*Two Rivers,*	Freshman.
Youmans, Guy Clarion,	*Neillsville,*	Special 1.
Young, Rosco Byron,	*Wausau,*	Freshman.

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SHORT COURSE.

Second Year.

Aderhold, Herman F.,	*Colby.*
Atwood, Melvin Lee,	*Rockford, Ill.*
Bale, Robert,	*Augusta, N. J.*
Ball, Leroy C.,	*Monroe.*
Barry, George Michel,	*Oregon.*
Behrens, Bernhard Fred Charles,	*Grafton.*
Blood, George Frederick,	*Appleton.*
Bourret, Floyd,	*Livingston.*
Brewer, Burt Foote,	*Berlin.*
Bristol, Abel Carter,	*Oakfield.*
Brunner, Martin George,	*Kellnersville.*
Byrne, John James,	*Appleton.*
Christianson, Oscar,	*Cambridge.*
Cockerill, Hugh Leroy,	*Berlin.*
Connell, Wesley Francis,	*Colgate.*
Corneliuson, Thomas,	*Belleville.*
Courter, Robert David,	*Hinsdale, Ill.*
Dahl, Robert M.,	*York.*
Davis, LeRoy Moshier,	*Franksville.*
Donaldson, Ernest Aubrey,	*Eau Claire.*
Dreger, Emil Louis,	*Madison.*
Dudleston, Claude,	*LaValle.*
Edwards, William Charles,	*Cambria.*
Ellickson, Alfred Carl,	*Cambridge.*
Elliott, Lewis R.,	*River Falls.*
Ellsworth, Eastman D.,	*Livingston.*
Emery, George Quincy,	*Stoughton.*
Emery, Lyman Joseph,	*Oconomowoc.*
Evans, Thomas H.,	*Wales.*
Farnam, Ernest,	*Shiocton.*
Finner, William August,	*Arcadia.*
Forsythe, John,	*Oconomowoc.*
Fox, Henry Thomas,	*Durand.*
Fruit, Clyde Everett,	*Arthur.*
Garbers, August,	*Barre Mills.*
Gleason, Gilbert Monroe,	*Madison.*
Goodell, Alfred, Jr.,	*Reedsburg.*
Griswold, Theodore Edwin,	*Livingston.*
Haunschild, Louis Gust,	*Whelan.*

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Hanson, Albert Franklin,	*City Point.*
Harte, Charles Herbert,	*Madison.*
Hartman, Andrew,	*Alma.*
Hatch, Lewis Marvin,	*Oakfield.*
Hesselberg, Arthur Edurn,	*Rockland.*
Holman, Ross Elmer,	*Waupaca.*
Hometh, Charles C.,	*Mt. Sterling.*
Hoopes, Robert Darlington,	*Bynum, Md.*
Howitt, Charles Harrison,	*Randolph.*
Howland, Howard H.,	*Waupun.*
Jackson, Joseph Fisher,	*Maryville, Mo.*
Jacobson, Henry Oscar,	*Cambridge.*
Jeffery, Harvey Bertram,	*Monomonee Falls.*
Johnson, Kasper,	*Blair.*
Johnson, Carl John,	*Blair.*
Jones, Albert,	*Dousman.*
Keenan, William McLeon,	*McFarland.*
Kent, Joseph Sherburne,	*Rusk.*
Kierstead, Irwin Allison,	*Oregon.*
Kilby, Otis Warrington,	*Wheeler.*
Kitchen, Joseph Henry,	*Eldorado.*
Klovdahl, John,	*Wittenberg.*
Kohlwey, Otto Fredrich,	*Grafton.*
Kolar, Frank Joe,	*Muscoda.*
Lindas, Theodore Aaron,	*Marshall.*
Linker, William John,	*Hartford.*
Lloyd, Evan Baldwin,	*Cambria.*
Logan, Ralph Gates,	*Madison.*
Mackie, Edwin Evan,	*Picketts.*
Mader, Harvey F.,	*Anson.*
Malde, Ole Gustav,	*Madison.*
Markey, William E.,	*Sullivan.*
Miles, Ira Dixon,	*Taylor.*
Mills, Stephen,	*Viroqua.*
Minnich, Hugh,	*Baraboo.*
Morgan, Hiram,	*Beloit.*
Mutch, Spencer Stuart,	*Dudley.*
McCarty, Edward Henry,	*Brownsville.*
Nelson, Ole Andey,	*Cumberland.*
Nye, Ernest Jonathan,	*Appleton.*
Ogilvie, Robert,	*Verona.*
Ogle, James Liguori,	*Waldo,*

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Oleson, Arthur Otto,	*Livingston.*
Oliver, Albert,	*Galesville.*
Partridge, Harry Charles,	*Cross Plains.*
Paulson, John Norman,	*Manitowoc.*
Peterson, Charles Albert,	*Orange.*
Pope, Nat, Jr.,	*Waupaca.*
Portz, Albert,	*Waukesha.*
Ray, Henry Kellogg,	*Kewanee, Ill.*
Richardson, Leonard C.,	*Oregon.*
Richter, Bernard Fred,	*Chippewa Falls.*
Rosenow, Louis John,	*Montana.*
Saxe, Arthur Wilbur,	*Whitewater.*
Schafer, Charles Herman Dan,	*Waukesha.*
Schreiber, Robert,	*Fall River.*
Scott, William Francis, Jr.,	*Port Washington.*
Semb, Thor Andrew,	*Erly.*
Skalitzky, Frederick James,	*Sun Prairie.*
Skowlund, James Henry,	*Marinette.*
Slaby, Edward George,	*Kewaunee.*
Smith, Clinton Eldon,	*Orfordville.*
Spooner, Carleton Maynard,	*Orange.*
Starker, Charlie,	*Sun Prairie.*
Stonhouse, Thomas Dickinson.	*Glendale, Manitoba, Can.*
Strader, Walter Earl,	*Augusta.*
Strange, Dalston Montgomery,	*Grand Ledge, Mich.*
Tellstrom, Elias,	*Eau Claire.*
Thiel, Alfred,	*Viroqua.*
Thieleke, Edwin Arthur,	*School Hill.*
Thompson, Theodore,	*Curtiss.*
Thompson, Chester J.,	*New London.*
Tiedebohl, Theodore Cook,	*Chicago, Ill.*
Toole, William Alexander,	*Baraboo.*
Truesdale, Thomas Sterling,	*Gillingham.*
Walworth, Roy Harwood,	*Mazon, Ill.*
West, John Benjamin,	*Whitewater.*
Williams, Arthur Richard,	*Waukesha.*
Williams, Jesse Elmore,	*Lancaster.*
Williams, Melvin Grant,	*Potosi.*
Wismer, Herman,	*Larsen.*
Woodcock, Edward Roy,	*Collins.*
Wrabetz, Frank,	*Kewaunee.*
Zimmerman, Fred David,	*Jordan.* —123

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SHORT COURSE.

First Year.

Ahrens, George Alfred,	*Mukwonago.*
Almon, Perry Tonsley,	*Weyauwega.*
Andrew, William Richard,	*Livingston.*
Bartlett, Roy Richmond,	*Madison.*
Barton, Otto Melvin,	*Mt. Horeb.*
Batho, Lester,	*Plum City.*
Bathrick, Herbert Redfield,	*Hewitt.*
Bell, George Sylvester,	*Middleton.*
Bemish, Frank R.,	*Hinsdale, Ill.*
Berg, William Edward,	*Bloomer.*
Beule, Elmore Alexander,	*Fox Lake.*
Bickford, George Hiram,	*Livingston.*
Bilkey, Joseph August William,	*Portage.*
Bixby, Phill Taylor,	*Appleton.*
Blackmun, Eugene,	*West Bend.*
Blakely, Albert Josiah,	*Neenah.*
Blanik, George Frank,	*Kodan.*
Bliese, Raymond F.,	*Waukesha.*
Bowden, Charles Benjamin,	*Mauston.*
Brager, Henry Arthur,	*Mt. Horeb.*
Bukke, Alfred LeRoy,	*Alban.*
Burns, Fred John,	*Hinsdale, Ill.*
Burton, Melvin Roy,	*Little Rapids.*
Calhoun, Reid Emerson,	*Aledo, Ill.*
Capener, Howard,	*Baraboo.*
Carey, Clinton Henry,	*Pine River.*
Castro, Jose Maria,	*Concepcion, Chili.*
Catt, Harry Walter,	*Clintonville.*
Chase, James Philip,	*Sun Prairie.*
Christenson, Christian Alfred M.,	*Walsh.*
Clusen, Reinhold,	*Manitowoc.*
Cole, James Omar,	*Knapp.*
Colenso, James Eade,	*Madison.*
Compton, Miles Alfred,	*Chicago, Ill.*
Conway, John Patrick,	*Elroy.*
Cooper, Arthur Allan,	*Elizabeth, Ill.*
Dale, Clarence Hurburt,	*Soldiers Grove.*
Dann, Frank Edward,	*Clark, S. D.*
Davis, John Frederick,	*Barneveld.*

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Earle, Lyman Dwight,	*Honey Creek.*
Eastman, Seth Arno,	*Sheboygan Falls.*
Eddy, Allin Richard,	*Lancaster.*
Evert, Edward,	*Pewaukee.*
Fawcett, Louis Sewell,	*Rome.*
Feathers, Oliver Calvin,	*Manawa.*
Fellenz, John,	*Kewaskum.*
Fenster, Arthur,	*Middleton.*
Flynn, Arthur,	*Delavan.*
Frauenheim, Oscar Reynold,	*Random Lake.*
Fruit, Earl James,	*Arthur.*
Funk, Walter Lewis,	*Honey Creek.*
Gallagher, Michael Martin,	*Elroy.*
Gerhardt, Walter,	*Neillsville.*
Gerpheide, Bert,	*Manitowoc.*
Ghastin, William,	*Twin Bluffs.*
Glindinning, Harry Lencon,	*Shullsburg.*
Gorman, John Peter,	*Fredonia.*
Grebe, Fred,	*Fox Lake.*
Gruhle, William Henry,	*Barton.*
Guptill, Laurence Rundle,	*Auburn.*
Haass, Otto Paul,	*Merton.*
Hamilton, Thomas Samuel,	*Westfield.*
Hansen, Norman,	*Auburn.*
Hanson, Herman Theodore,	*Sawyer.*
Hardt, Walter Robert Henry,	*Janesville.*
Harland, Robert Erwin,	*Cottage Grove.*
Harns, John Patrick,	*West Bend.*
Hatch, James Reuben,	*Waupaca.*
Heike, Rudolph Herman,	*Tarrant.*
Hendrichs, Lewis Edward,	*Campbellsport.*
Hermanson, Herbert,	*Rio.*
Hetts, Gary,	*Ft. Atkinson.*
Hetzel, Peter Andrew,	*Rubicon.*
Hintze, William Robert,	*Stoughton.*
Howard, Arthur Eugene,	*Whitewater.*
Hubbard, Harvey,	*Fredonia.*
Hudson, William Dwight,	*Reedsburg.*
Hundt, Peter A.,	*Bangor.*
Jarr, Herman Daniel,	*Manitowoc.*
Jenson, Freddie,	*Waupaca.*
Johnston, Frank Roy,	*Appleton.*

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Joos, Frank Benjamin,	*Fountain City.*
Jordalen, Clarence,	*Stoughton.*
Jorgensen, Edward,	*Neenah.*
Kaufmann, Joseph Herman,	*Manitowoc.*
Keipper, Edward Louis,	*Menomonee Falls.*
Kerthals, August C.,	*Milwaukee.*
Kielsmeier, Ralph Charles,	*Hika.*
Kiley, Eugene Francis,	*Curran.*
Koda, Yujiro,	*Hiogo, Kobe City, Japan.*
Krause, William August,	*Aztalan.*
Kressin, Arthur Edmund,	*Cedarburg.*
Krogan, Henry,	*Viroqua.*
Kuehn, Charles Augustus,	*Brandon.*
Larsen, Theodore Stanley,	*Westby.*
Lassell, Wallace,	*Orfordville.*
Lawrence, Floyd Windsor,	*La Crosse.*
Leischer, John Christian,	*Duplainville.*
Lewellin, George Casper,	*Waterloo.*
Lewis, Eri H.,	*Whitewater.*
Little, Harvey Henry,	*Janesville.*
Lobdell, Garth Leland,	*Mukwonago.*
Lord, Karl Williams,	*Cambridge.*
Lothe, Herbert,	*Stoughton.*
Luening, Fred William,	*Wauwatosa.*
Lyle, Stanley D.,	*Madison.*
Main, Herbert Allan,	*Ft. Atkinson.*
Marty, Matthias,	*Albany.*
Mayhew, Joe Oschar,	*Greenbush.*
Melville, David Howard,	*Colgate.*
Menn, Bennie Arthur,	*Norwalk.*
Meschefske, John,	*Little Black.*
Muerer, Paul, Jr.,	*Powers Lake.*
Miles, William Fredenal,	*Oconomowoc.*
Miller, Harvey H.,	*Evansville.*
Miller, Charles Henry,	*Racine.*
Morris, George Charles,	*Ridgeway.*
Muehleisen, Gottlieb,	*Terold.*
Mulcahy, John William,	*Belmont.*
McCauley, Rex Chadbourne,	*Osseo.*
McMillan, Hubert Neil,	*Nero.*
Nelson, Erwin Alfred,	*Kaukauna.*
Nelson, Christen Gustave,	*Island Lake.*

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Newhouse, Charles Lewis,	*Clinton.*
Olson, Otto William,	*Walsh.*
Pederson, Carl Adolph,	*Cambridge.*
Pitt, Ernest H.,	*Milton.*
Post, Harry Luther,	*Sextonville.*
Raichle, William,	*Frenchville.*
Rankin, Walter David,	*Menomonee Falls.*
Rankin, Everett John,	*Templeton.*
Raven, John Wesley,	*Bloomer.*
Redelings, Henry,	*Marinette.*
Richter, Walther,	*Whitefish Bay.*
Reisch, John Henry,	*Montana.*
Risum, Louis Elmer,	*Orfordville.*
Rosenow, Arthur Frederick,	*Oconomowoc.*
Rundell, Brian Leroy,	*Livingston.*
Rustad, John,	*Black River Falls.*
Salter, Ray Floyd,	*West Bend.*
Schellenger, Roy George,	*Marshfield.*
Schnabel, Alfred,	*Neillsville.*
Shape, Oscar Julius,	*Milwaukee.*
Shepard, Rodney Austin,	*Columbus.*
Sizer, George Stephen,	*Fond du Lac.*
Smiley, James Bemus,	*Albany.*
Smith, John Isaac,	*Union Center.*
Snuggerud, Helmer Hanson,	*Holmen.*
Spahr, William Burdell,	*Castalia, Iowa.*
Spaulding, Clyde Ferris,	*Oconomowoc.*
Stantorf, Walter Henry,	*Boscobel.*
Stebbins, Allen Porter,	*Eagle.*
Steele, Samuel Hanley,	*Lodi.*
Steinhoff, Walter John,	*Platteville.*
Stienstra, Samuel John,	*Galena, Ill.*
Stommel, Eugene,	*Mayville.*
Strand, Oscar Martin,	*Rice Lake.*
Strate, Archie,	*Neenah.*
Suhr, Adolph Arthur,	*Cochrane.*
Taft, Vernon Roy,	*Whitewater.*
Tallmadge, James Johnston,	*Milwaukee.*
Teisberg, Samuel Henry,	*Stoughton.*
Thomas, Ray Marcellus,	*Milwaukee.*
Thompson, George Otto,	*Mt. Horeb.*
Thompson, Gerhard Brun,	*Viroqua.*

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Thompson, Melim,	*Mt. Horeb.*
Treleven, Guy Thomas,	*Omro.*
Troeller, Jacob Martin,	*Rubicon.*
Tubbs, George Peter,	*Seymour.*
Tulley, Andrew,	*Delavan.*
Turner, Roy Stoughton,	*Stoughton.*
Uelmen, Adam E.,	*New Prospect.*
Vandercook, Ray Isaac,	*Linden, Mich.*
Van Heuklom, Willard Alfred,	*Appleton.*
Venaas, Herman Adolph,	*Rockdale.*
Vogel, Albert Herman,	*Shiocton.*
Walker, Ray Clifton,	*Plainville.*
Wallin, Joseph Edward,	*Atlas.*
Warmington, Prentice George,	*Honey Creek.*
Welton, Clarence,	*Monroe.*
Whelan, John Vale,	*Mondovi.*
White, James Earnest,	*Waucousta.*
Wilkowske, Robert Theadore.	*Mishicott.*
Wolkow, Benjamin John,	*Rubicon.*
Wright, Marvin Tompkins,	*Waupun.*
Zabel, Julius George,	*Deerfield.*
Zabel, William Carl,	*Deerfield.*

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Dairy Course Class.

FIRST YEAR.

Alexander Earl John,	*Omro.*
Amundson, Arthur Bernhard,	*Holmen.*
Anderson, Christ D.,	*Spring Valley.*
Anderson, Robert Samuel,	*Peru.*
Atwood, Earle Noyes,	*Trempealeau.*
Bachofen, Herman,	*Brodhead.*
Bahr, Charles August,	*Howards Grove.*
Ballantyne, Fred,	*Ripon.*
Bast, Henry,	*Fond du Lac.*
Bateson, Harry, Jr.,	*Richland City.*
Becker, Philip,	*North Lake.*
Bennett, Andrew,	*Chippewa Falls.*
Bergs, Joseph,	*Poniatowski.*
Bergstrum, Iver,	*Glen Flora.*
Black, George,	*Arkansaw.*
Blanik, Louis,	*Kodan.*
Bolstead, Lewvean Low,	*Deerfield.*

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Boon, Ernest Henry,	*Janesville.*
Bradt, Clarence Alfred,	*Monroe Center.*
Bragg, Clarence Tallmadge,	*Bloomer.*
Brehm, Henry George,	*Brehm.*
Burkel, Michael,	*Green Bay.*
Burkholter, Alfred,	*Monroe.*
Butler, Roscoe W.,	*Modena.*
Button, Forrest Clair,	*Melrose.*
Chapman, John Franklin,	*Little Prairie.*
Chatt, William Elmer,	*Highland.*
Clark, Wilbur Emmet	*Weyauwega.*
Clementson, Wm. Franklin,	*Branstad.*
Cook, John Joseph,	*Burlington.*
Demouth, John Clemens,	*Neillsville.*
Dietl, Andrew,	*Plain.*
Dimmock, Archie Fred,	*Iola.*
Doudna, Leon Hart,	*Gillingham.*
Douglas, Henry Albert,	*Plainville.*
Draheim, John August,	*Reedsville.*
Dubois, Desire Leonard,	*Waltham.*
Egnaszek, Joseph John,	*Pulaski.*
Erickson, Hjalmar Henry,	*Hadleyville.*
Fiegel, Benjimen,	*Hancock.*
Fuller, Warner Albert,	*Merton.*
Funk, John,	*Milwaukee.*
Foltz, Harry Wilson,	*Georgetown.*
Forsythe, Silas,	*Baldwin.*
Gluch, Herman Henry,	*Granton.*
Gower, Cornelius Ralph,	*Rusk.*
Haas, Elmer August,	*Kingston.*
Haas, Herman August,	*Naugart.*
Hafdahl, Thurston Peter,	*Moland, Minn.*
Hales, Philip William,	*Granton.*
Harder, Ralph Frederick,	*Astoria, Ore.*
Harma, Fred Henry,	*Loganville.*
Harrer, Ellra Ellis,	*Liberty, Pa.*
Haukon, Otto,	*Pigeon Falls.*
Henning, Arthur William,	*Eldorado.*
Hensel, August,	*Woodhull.*
Hill, Floyd Layton,	*Weyauwega.*
Hinze, Fred Chase,	*Le Seuer, Minn.*
Hodkinson, Wilfred,	*Mazomanie.*

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Hoelzel, Frank Joseph,	*Sharon.*
Hoke, William Johnson,	*Ithaca.*
Holcomb, Willis Roy,	*Elkhorn.*
Hoyt, Guy Raymond,	*Brooklyn.*
Huettner, Charles,	*Chippewa Falls.*
Johnson, Clark,	*Richland Center.*
Kettner, Joseph,	*Elmhurst.*
King, Franklin Herbert,	*Plainfield.*
Kinney, Clarence Waron,	*Amery.*
Koehler, Martin August,	*West Bloomfield.*
Koepsell, Reinhold,	*Lomira.*
Krumholz, Emil Anton,	*Arcadia.*
Kubat, William Henry,	*Neillsville.*
Kuettel, John Godfrid,	*Oshkosh.*
Kustka, George Jacob,	*Krok.*
Laabs, Arthur Gustav,	*Colby.*
Laabs, Fred William,	*Colby.*
Le Court, Louis Joseph,	*Oconto.*
Landers, Herbert LeRoy,	*Melrose.*
Lark, Richard Harris,	*Markesan.*
Larson, Louis,	*Black River.*
Laurent, Victor,	*Rio Creek.*
McNab, Alexander James,	*Black River Falls.*
Martin, Milton Leslie,	*Kilbourn.*
Marty, Gottlieb,	*Humbird.*
Marquardt, Theodore Wm.,	*Lombard, Ill.*
Meracle, Ormul,	*Whitewater.*
Merrill, Edward Cressey,	*Oneida.*
Meyer, Fred William,	*Lake Mills.*
Mietzke, Fred John,	*White Creek.*
Mitchell, William Walter,	*Portage.*
Muehleisen, Gottlieb,	*Herold.*
Natzke, Theodore William,	*Bonduel.*
Nedvidek, Fred,	*Ceylon.*
Nelson, Lewis Sund,	*Milltown.*
Nelson, Nils George,	*Milltown.*
Newman, Herman Fred,	*Oakland.*
Niederer, Ulrich John,	*East Farmington.*
Nolan, Peter Louis,	*Eastman.*
Noyes, Herbert Luther,	*Muscoda.*
O'Connor, John M.,	*Disco.*
O'Keefe, William,	*Merrimac.*

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Oleson, Alvin Julius,	*Montfort.*
Olson, Gustav E.,	*Boscobel.*
Paliwada, John,	*Stevens Point.*
Phillips, Claude Elbert,	*Eau Galle.*
Pierce, Lucius Scott,	*Burlington.*
Powers, Walter,	*Highland.*
Price, Albert John,	*Tacoma, Wash.*
Priebe, Henry,	*Logansville.*
Proctor, George,	*Mineral Point.*
Raven, Herman Case,	*Bloomer.*
Reedy, James Albert,	*Beatrice, Neb.*
Reinhard, Arnold,	*Monroe.*
Rindlisbacher, John,	*Monroe.*
Rindlisbacher, Fred,	*Monroe.*
Roese, Fred Julius,	*Hartland.*
Roulston, David,	*Kenosha.*
Ryan, Thomas Francis,	*De Pere.*
Saugen, Joseph Nichols,	*Cleghorn.*
Schaetzel, Edward William,	*So. Germantown.*
Schwartz, John,	*Bloomer.*
Shaughnessey, Daniel Richard,	*Le Seuer, Minn.*
Shepherd, Ensley C.,	*Mineral Point.*
Shimek, Emil,	*Branch.*
Siggelkow, Emil Otto,	*Centerville.*
Singleton, John Franklin,	*Newboro, Ont.*
Sleger, Frank John,	*Kellnersville.*
Smith, Harold Leon,	*Leon.*
Sneberk, Albert,	*Algoma.*
Soltwedel, Ernest,	*Loganville.*
Sorensen, Harry Manville,	*Milltown.*
Splittgerber, Fred,	*Clintonville.*
Statelen, Merton Louis,	*Amery.*
Steines, Theodore Leo,	*Boscobel.*
Sterns, William Paul,	*Kasson.*
Stevenson, Wallace,	*Oakland, Cal.*
Stratton, James Roy,	*Meridian.*
Swenson, Scenaus,	*Boscobel.*
Thompson, Perry William,	*Galesville.*
Thompson, Sidney Crosby,	*Winterport, Me.*
Thurow, Julius John,	*Oconomowoc.*
Wallace, Daniel Freeman,	*Brook.*
Waterstreet, Frank John,	*Kewaunee.*

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Welke, Frank Garfield,	*Cleghorn.*
West, Arthur,	*Amery.*
West, Jay Pike,	*Elkhorn.*
Whitney, Ira Parker,	*Corvalis, Ore.*
Wilke, Albert Fred,	*Dartford.*
Williams, John Irvin,	*Menomonie.*
Willis, Robert James,	*Mineral Point.*
Wilson, William Taylor,	*Indianapolis, Ind.*
Yates, Frank Charles,	*Packwaukee.*
Zander, Peter Joseph,	*Cross Plains.*
Zimmerman, Erwin Germain,	*Attica.*
Zumkehr, Peter	*Attica.*

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SUMMER SESSION OF 1903.

Graduates.

Ackermann, B. A.,
German, Pedagogy, English. *New Ulm, Minn.*

Anderson, Isaac Morene, B. A., Augustana College,
English, Greek. *St. Peter, Minn.*

Archard, Elizabeth Stanton, B. S., Amity College,
German, Latin. *College Springs, Ia.*

Barnard, Arthur Fairchild, A. B., Beloit College,
History, Political Science. *Chicago, Ill.*

Barnard, David Luther, B. S., University of Wisconsin,
German, Bacteriology. *Earleville, Ill.*

Bloomstein, Lizzie Lee, A. M., University of Nashville,
History, English. *Nashville, Tenn.*

Boyle, James Ernest, A. B., Nebraska University, A. M., Kansas University,
Economics. *Madison.*

Buell, Kate M., B. S., University of Wisconsin,
Geology. *Sun Prairie.*

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Chandler, Zachary Anson, B. L., University of Wisconsin,
History, English, Economics. *Oregon, Wis.*

Chapin, Robert Coit, B. A., Beloit College,
Economics. *Beloit.*

Cole, Jessie Martha, B. L., University of Wisconsin,
German, Latin. *Sheboygan Falls.*

Corson, Cora Mabel, B. L., Milton College,
Physics, German. *Monroe.*

Desmond, Cora Frances, B. L. University of Wisconsin *Fox Lake.*

Dudley, Lillian Lee, A. B., Beloit College,
English, Latin. *West Salem.*

Farley, John Herbert, M. A., Lawrence University, M. A., Harvard University,
Philosophy. *Merton.*

Fernekes, Gustave, B. S., University of Wisconsin,
Chemistry. *Milwaukee.*

Frost, William Dodge, M. S., University of Minnesota,
Bacteriology, Botany, Chemistry. *Madison.*

Fuller, Robert Warren, A. B., and A. M., Harvard University,
Physics. *New York.*

Gould, George Winfield, A. B., University of Denver.
Economics, Philosophy, Pedagogy. *Durango, Col.*

Grimm, August, Ph. B., University of Wisconsin.
Mathematics, Physics, Economics, *Two Rivers.*

Hadley, Sarah Louise, A. M., Columbia University,
History. *S. Centerbury, Conn.*

Hardwick, Francis Tiley, B. A., London, England,
Chemistry, Physics, *Winona, Minn.*

Hasse, August Frederick, B. L., University of Wisconsin,
English, Philosophy, Physics, *Wauwatosa.*

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Heyward, Aaron, Ph. B., University of Wisconsin,
Education, Economics, English, Chemistry, *Greenwood.*

Hinckle, Edgar Clayton, A. B., Indiana University,
German, Mathematics, *Winona, Minn.*

Howe, Gracia Woodburn, B. A., University of Wisconsin,
English History, Political Science. *Pierre, S. D.*

Howe, Winfred Chester, B. L., University of Wisconsin.
Latin, History, *Sheboygan.*

Howes, Myra Janes, B. A., Oberlin College,
English, French, *Mendota, Ill.*

Iwan, Clara Marie, Ph. M., Northwestern College Chicago Training School,
German, *Streator, Ill.*

Jaeck, Emma Gertrude, B. L., University of Wisconsin,
Latin, French, *Omro.*

Jamieson, William Henry, B. L., University of Wisconsin,
Chemistry, Pedagogy, *Tomahawk.*

Kittle, William, Ph. B., in Ped., University of Wisconsin,
History, Pedagogy, *Mazomanie.*

Kuhn, Albert, A. B., Northwestern University, Watertown,
English, German, *Watertown.*

Liebenberg, Herman Henry, B. S., University of Wisconsin, *Alma.*

Janes, Henry Lorenzo, M. L., University of Wisconsin,
Economics, Political Science, History, *Racine.*

Marsh, Ellen Fowler, B. A., Northwestern University,
Physics, Botany, *Northfield, Minn.*

Marsh, Jennette Eliza, Ph. B., Oberlin College,
German, History, *Fargo, N. D.*

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McCulloch, John Alexander, B. S., Carleton College,
Chemistry, Physics, *Madison.*

McDowell, John Chambers, B. S., in Agr., University of Wisconsin,
Chemistry, Bacteriology, *Madison.*

McKenney, Charles, B. S., Michigan Agriculturist College, A. B., and A. M., Olivet College,
History, Philosophy, *Milwaukee.*

McNiel, Anne Holmquist, Ph. B., University of Wisconsin,
French, English, Pedagogy, *Madison.*

McVicar, Katherine, B. L., University of Wisconsin,
English, History, *Waukesha.*

Myers, Horner Samuel, A. B., Baker University,
Mathematics, *Chaoman, Kas.*

Nichol, Hubert Leland, A. B., Denison University,
English, *Madison.*

Nichol, Josephine Shepardson, A. B., Denison University,
History, German, English, *Madison.*

Northrop, George Norton, B. A., University of Minnesota,
Greek, *Minneapolis, Minn.*

Noyes, Nettie Strong, B. L., University of Wisconsin,
German, *Oshkosh.*

Olson, Alta Ezma Southworth, Ph. B., Lawrence University,
German, English, *Tomahawk.*

Osborne, James Harvey, A. B., and A. M., Wabash College,
History, Political Science, *Crawfordsville, Ind.*

Osborne, Julia Sherlock, B. A., University of Wisconsin,
Botany, *Madison.*

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Paine, Gertrude Ethel, B. A. Milwaukee Downer,
English, Latin, History, *North Greenfield.*

Pease, Raymond Burnette, B. L., University of Wisconsin,
English, Political Science, *Madison.*

Persons, Warren Milton, B. S., University of Wisconsin,
Economics, *Madison.*

Pray, Carl Esek, B. L., Olivet College,
History, *Milwaukee.*

Quaintance, Hadley Winfield, A. B., University of Nebraska, A. M., University of Illinois,
History, Economics, Political Science, *Madison.*

Reece, Andrew A., B. S., St. Olaf College,
Botany, *Northfield, Minn.*

Reed, George Matthew, A. B., Geneva College,
Anatomy, Botany, *Beaver Falls, Pa.*

Richardson, Berl DeWitt, B. S., University of Wisconsin,
French, Anatomy, Geology, *Plymouth.*

Robb, Francis Green, B. S., Parsons College,
Bacteriology, Chemistry, *Russell, Iowa.*

Roemer, Emma Maria, B. L., University of Wisconsin,
History, German, *Madison.*

Schlundt, Herman, Ph. D., University of Wisconsin,
Chemistry, *Columbia, Mo.*

Sears, Rolla Gilbert, B. L., Christian University,
German, French, *Madison.*

Shaw, Edwin Benjamin, A. B., and A. M., Milton College,
Chemistry, Latin, *Milton.*

Slatter, Frances, B. S., University of Wisconsin,
English, Mathematics, *Sun Prairie.*

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Stewart, Ada, A. B., University of Michigan,
Latin, *Peoria, Ill.*

Stiles, Minnie Margaret, B. L., University of Wisconsin,
Latin, German, *Columbus.*

Sullivan, Ellen Theresa, B. A., and A. M., Cornell College,
Botany, *Watertown.*

Sutherland, Nellie, A. B., Grand Island College.
English, *Grand Island, Neb.*

Thomas, Stephen Miles Waterbury, Ph. B., University of Wisconsin,
Mathematics, *Madison.*

Thomas, Walter Davis, A. M., Milton College,
History, Greek, *Milton.*

Thuerer, Edward Walter B. L., University of Wisconsin,
Anatomy, Bacteriology, *Baraboo.*

Townsend, Clyde Louis, B. A., University of Wisconsin,
Economics, English, German, *Madison.*

Trump, Rodger Murphy, B. L., University of Wisconsin, *Milwaukee.*

Tweeden, Melvin Eugene, Ph. G., University of Wisconsin, *Oconomowoc.*

Vorheis, Charles Taylor, B. S., Iowa Wesleyan University,
Anatomy, Botany, *Madison.*

Warner, Florence Maurine, B. S., University of Wisconsin,
Anatomy, Geology, *Windsor.*

Way, Royal Brunson, Ph. M., University of Michigan,
History, *Saginaw, Mich.*

Wells, Frank Justin, B. S., Lawrence University,
Chemistry, *Winnebago.*

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Welsh, Eunice Wallace, B. L. University of Wisconsin,
English, *Madison.*
Westergaard, Christian, B. S., University of Wisconsin,
Chemistry, *Madison.*
Winden, Julius, Ph. B., University of Wisconsin,
History, Pedagogy, *East Troy.*
Wood, Norman Curtis, B. A., University of Wisconsin,
Latin, *Madison.*
Wright, Grace Anna, B. L., University of Wisconsin,
Political Science, *Janesville.*
Zimmerman, Viola May, Ph. B., University of Wisconsin,
History, Mathematics, *Milwaukee.*

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Undergraduates and Teachers.

Anger, Bernhard Frederick, *Milwaukee.*
Ap Roberts, Elizabeth, *River Falls.*
Baker, Joseph Henry, *Merrill.*
Bartelt, Arthur Herman, *Ft. Atkinson.*
Beebe, Marcus Phin, *Ipswich, S. D.*
Bernard, Anna Augusta, *Montezuma, Iowa.*
Bernard, Jessica Estelle, *Montezuma, Iowa.*
Bird, Wayne Doty, *Madison.*
Blied, Frank O., *Madison.*
Bonde, Fred Bernard, *Valley City, N. D.*
Bonfoy, Jennie Prudence, *Milwaukee.*
Bowden, Arthur Garfield, *Pepin.*
Braband, Lily Mary, *Milwaukee.*
Bridgman, Benjamin William. *Darlington.*
Brinkman, Carlyle K., *Superior.*
Broughton, Ray, *Evansville.*
Burdick, Alice Lisle, *Madison.*
Burns, Joseph Patrick, *Madison.*
Bushnell, Lillian May, *Platteville.*
Butler, Leroy Dawson, *Madison.*
Camillus, Sister Mary, *Madison.*

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Cantwell, Lucy Mae,	*Stevens Point.*
Carroll, William Peter,	*Wales.*
Carter, Winnie May,	*Mauston.*
Claridge, George,	*Reedsburg.*
Claridge, Joshua,	*Reedsburg.*
Clark, Arthur John,	*Janesville.*
Cleasby, Ethan Allen,	*Eleva.*
Codding, Zoe,	*Findlay, Ohio.*
Collman, Frederick Albertus,	*Madison.*
Cook, Ethel,	*Fifield.*
Cook, Leo Marshall,	*Madison.*
Cooley, Ida,	*Madison.*
Cowgill, James Daniel,	*Doylestown.*
Currie, Allister,	*Wauwatosa.*
Curtis, Raymond William,	*Waupun.*
Davis, Newell Jeremiah,	*Evansville.*
Dean, Albert Briggs,	*Madison.*
DeLacy, John,	*Viroqua.*
Derge, Herman Ferdinand,	*Eau Claire.*
Dernehl, Paul Herman,	*Milwaukee.*
Dexter, Elise Forsythe,	*Chicago, Ill.*
Dixon, Sarah,	*Nora, Ill.*
Doudna, Edgar George,	*Richland Center.*
Dougherty, William Dawson.	*Arena.*
Earll, Julia Louisa,	*Bear Valley.*
Eaton, Frank Julius,	*Cudahy.*
Edgerton, Robert Henry,	*Muscatine.*
Edwards, Ida May,	*Waukesha.*
Elliott, Isaac,	*Menominie.*
Ellis, Jacob Taylor,	*Carbondale, Ill.*
Epstein, Charlotte Wilmina,	*Portage.*
Erwin, Orlando R.,	*Milwaukee.*
Eustis, Charles Loron,	*Madison.*
Evert, Lewis Magnus,	*Pewaukee.*
Faller, Phoebe Maud,	*Madison.*
Fehr, Margaret,	*St. Cloud, Minn.*
Fenton, Polly,	*Madison.*
Fidelia, Sister Mary,	*Madison.*
Fish, Herbert Clay,	*Madison.*
Fitch, Helen Floy,	*Koshkonong.*
Flickinger, Floyd Spangler,	*Council Bluffs, Iowa.*
Forbes, Mary Alice,	*Hartford.*

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Frank, Herman August,	*Watertown.*
Gabrilsen, Marthine Sara,	*New Hampton, Iowa.*
Gath, Minna Evangeline,	*Madison.*
Gilbert, Edna Marion,	*Madison.*
Gilkey, George Leland,	*Oshkosh.*
Grace, Sister Mary,	*Madison.*
Gray, Helen Maude,	*Milwaukee.*
Grebe, Ricka Henriette,	*Fox Lake.*
Green, Edward Emerson,	*Basco.*
Green, Walter Edward,	*Eagle.*
Grove, William Edward Henry,	*Madison.*
Guitau, Flora,	*Freeport, Ill.*
Gunderson, Oscar,	*Iola.*
Haessler, Luise,	*Milwaukee.*
Hainke, Hulda Bertha,	*Milwaukee.*
Halgrim, Isabell Charlotte,	*Dodgeville.*
Halsey, Cora Moore,	*Oshkosh.*
Hamilton, Fred Rutherford,	*Richland Center.*
Handley, Edward,	*Horicon.*
Hanks, Marshall Wilfred,	*Madison.*
Hanson, Charles,	*Monroe.*
Harder, Edmund Cecil,	*Milwaukee.*
Hardtke, August Charles,	*Milwaukee.*
Harrison, Edna Lucretia,	*Madison.*
Harvey, Isabel,	*Lake Mills.*
Hayes, Maude,	*Oconomowoc.*
Hendrickson, Amy Louise,	*Madison.*
Henry, Emma Levantine,	*Lead, S. D.*
Hill, Carl Newell,	*Spring Green.*
Hosler, Harry,	*Reedsburg.*
Houghton, Albert Balch,	*Milwaukee.*
Hubbard, Ira Odell,	*Westfield.*
Hughes, Laura Edgerton,	*Oconomowoc.*
Huhn, Oscar Ferdinand,	*Cleveland.*
Hutchinson, Harry Turner,	*Huron, S. D.*
Jaeck, Ora Mable,	*Omro.*
Janisch, Emma Emilie,	*Waterloo.*
Jensen, Ellen Marie,	*West Bend.*
Jones, Ida Isabelle,	*Plymouth.*
Jones, Marion Burr,	*Madison.*
Jones, Mary Amelia,	*Spring Green.*
Kaub, Verne Paul,	*Madison.*

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Kelling, Max John,	*Milwaukee.*
Kinnan, Margaret Briton,	*Indianapolis, Ind.*
Klienhaus, Sophie Dorothy,	*Crawfordsville, Ind.*
Knowlton, Philip Arnold,	*Madison.*
Koltes, Anna Marian,	*Madison.*
Krape, William Garman,	*Freeport, Ill.*
Kunerth, William,	*La Crosse.*
Lambeck, Arthur Hugo,	*Milwaukee.*
Langwill, Minnie Johnston,	*Rockford, Ill.*
Larsen, Karen,	*Decorah Iowa.*
Larson, Lewis P.,	*Whitehall.*
Lauderdale, Clara Mary,	*Elkhorn.*
Leavy, James Henry,	*Madison.*
Lindemann, Albert Louis,	*Milwaukee.*
Lohrie, Robert Fulton,	*Waterford.*
Ludlow, Hattie,	*Monroe.*
Luening, Edwin Garfield,	*Milwaukee.*
Lyman, Charles Adelbert,	*Burke.*
Lyons, Nettie Regina,	*Madison.*
Lynd, Nellie,	*Moline, Ill.*
MacDonald, Philip Walter,	*Peshtigo.*
Maguire, Beach Woodruff,	*Rockford, Ill.*
Manchester, Frederick Alexander,	*Madison.*
Manning, Florence Edna,	*Belvidere, Ill.*
Manson, Alice Justina,	*Belleville.*
Marston, Myrtle Louisa,	*Hartford.*
Massmann, Clara Julia,	*Muscoda.*
McCollins, Clara,	*Dubuque, Iowa.*
McComb, Earl Vinton,	*Brillion.*
McConville, Hannah Cecelia,	*La Crosse.*
McCulloch, Dorothy,	*Madison.*
McNitt, Willard Charles,	*Logansport, Ind.*
McDonald, Anna Eulalia,	*Baraboo.*
McKercher, Katherine Margaret,	*Grand Rapids.*
McLaughlin, William Allen,	*Eland.*
McNamara, Charles,	*Montello.*
Menzies, Robert Campbell,	*Rock Prairie.*
Mercer, Samuel Alfred Browne,	*Stoughton.*
Merrick, Jessie Bee,	*Madison.*
Merritt, Mary Gilman,	*Chicago, Ill.*
Milbradt, Herman Gustav,	*Edgar.*
Milbrath, David Gallus,	*Whitefish Bay.*

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Miller, Marie Grace,	*Madison.*
Miller, Minnie Joan,	*Minneapolis, Minn.*
Moeller, Dorothea,	*Lyons, Iowa.*
Monson, Margaret Sophia,	*Chicago, Ill.*
Morgan, Kent Able,	*Oakfield.*
Morgan, Lillian Belle,	*Saginaw, Mich.*
Morrow, Angus Cameron,	*River Falls.*
Muench, Joseph Frederick,	*Buffalo City.*
Murray, Donald John, Jr.,	*Wausau.*
Nalty, Josephine Agnes,	*Monroe.*
Nelson, Conrad Joseph Norman,	*Chetek.*
Ogilvie, Lottie May,	*Verona.*
Ohnsted, Lewis William,	*Boone, Iowa.*
Olin, Edna Jane,	*Belleville, Ohio.*
Osthelder, Edwin Clark,	*Sheboygan Falls.*
Parks, Lewis Woodworth,	*Watertown.*
Pease, Clifford Coleman,	*Madison.*
Pettigrew, Bessie,	*Sioux Falls, S. D.*
Pffaflin, Frieda Louise,	*Indianapolis, Ind.*
Playter, James Andrew,	*Eau Claire.*
Poage, George Coleman,	*La Crosse.*
Potter, Clark Zeph,	*Jackson, Mich.*
Potter, Paul David,	*Madison.*
Preston, Charles Herbert,	*Westfield.*
*Randall, Darius Scofield,	*Bay City, Mich.*
Rathjen, Edwin Frederick,	*Milwaukee.*
Ray, Richard Johnson,	*La Crosse.*
Ray, Mabel Shaw,	*Gowrie, Iowa.*
Ray, William Henry,	*Gowrie, Iowa.*
Reed, Addo Mary,	*Whitewater.*
Reed, Harry S.,	*Lansing, Mich.*
Reul, Hildegard,	*Mendota, Ill.*
Richter, Arthur William,	*Milwaukee.*
Rickeman, Frederick Henry,	*Racine.*
Rider, Melinda Catherine,	*Madison.*
Roeker, William Frederick,	*Addison.*
Ross, Emile Augustus,	*Lake Geneva.*
Ruegnitz, Marie Evangelista,	*McGregor, Iowa.*
Runner, Olive Grace,	*Freeport, Ill.*

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Rush, Alice Mary,	*Rochester.*
Saby, Anna Guenella,	*Baldwin.*
Sanborn, Eugene Hiram,	*Madison.*
Sanborn, Norman Walker,	*Ashland.*
Sauerberg, Otto Friedrich,	*Madison.*
Schram, Peter Henry,	*Madison.*
Schrieber, William Earle,	*Madison.*
Schule, Paul Adolph,	*Chicago, Ill.*
Scott, Alice Caroline,	*Sterling, Ill.*
Shattuck, Georgia Mabel,	*Medford.*
Shepardson, George Allen,	*Old Orchard, Mo.*
Shiels, Harry Elliott,	*Madison.*
Slinde, Arthur Christian,	*DeForest.*
Slinde, Imelia Josephine,	*DeForest.*
Smith, Grace,	*Kilbourn.*
Smith, Maude Emily,	*Beaumont.*
Solsrud, Hilman,	*Whitehall.*
Stephens, Mabel Edna,	*Fennimore.*
Stewart, Anna,	*Lake Geneva.*
Stewart, Howard MacDonald,	*Delavan.*
Stockman, Rebecca,	*Milton Junction.*
Stokes, Guy Percy,	*Flanduan, S. D.*
St. Sure, Frank Adolph,	*Madison.*
St, Sure, Jeanette Lucile,	*Madison.*
Swetland, Will Delbert,	*Menominie Falls.*
Taylor, Eliza Amelia,	*Bronxville, N. Y.*
Taylor, Jane Isabella,	*Bronxville, N. Y.*
Townsend, John Robert,	*Waupaca.*
Trabne, Elsie,	*S. Milwaukee.*
Tuttle, Grace,	*Richland Center.*
Venus, Helen Marie,	*Shewano.*
Wagner, Ray Taber,	*Dubuque, Iowa.*
Waldhier, Edward Baptist,	*Beaver Dam.*
Weatherlow, Guy Porter,	*Madison.*
Wells, Earl Harold,	*Madison.*
Wheeler, William Sprague,	*Chicago, Ill.*
Wheelwright, Orville William,	*Belleville.*
Whitman, Roscoe,	*Dodgeville.*
Wightman, Nellie Maude,	*Richland Center.*
Williams, Daniel S.,	*Waukesha.*
Wilson, Ella Florence,	*Viroqua.*
Wing, Elizabeth,	*La Crosse.*

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Woolever, Lester B.,	*Madison.*
Works, George Alan,	*Augusta.*
Wright, Milton Raleigh,	*New London.*
Yost, Anna Katherine,	*Shakapoo.*
Young, Roscoe Byron,	*Wausau.*
Zieher, Emeline Elizabeth,	*West Bend.*

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SUMMER SESSION FOR APPRENTICES AND ARTISANS.

GRADUATES.

Berg, John, L. B., and Ph. M., University of South Dakota,
Physics, Mathematics. *Madison.*

Coombs, Adelaide, Grad. National Academy of Design,
Mechanical Drawing, *Lake Champlain, N. Y.*

Frechtling, Arthur George, M. E., Ohio State University,
Engineering, *Hamilton, Ohio.*

Lincoln, Azanah Thomas, Ph. D., University of Wisconsin,
Chemistry, *Urbana, Ill.*

Otwell, Allen Meade, M. S., and B. S., University of Illinois,
Mathematics, *Madison.*

Thwing, Frederick Floyd, A. B., Oberline College,
Pedagogy, *Louisville, Ky.*

Trooien, Ole N., B. S., Brookings Agricultural College,
Engineering, *Brookings, S. D.*

Vosskuehler, Joseph Henry, M. E., Ohio State University,
Mechanical Drawing, *Columbus, Ohio.*

Wise, Frank Ambrose, A. B. St. Louis University,
Engineering, *St. Louis, Mo.*

Yocum, Wilbur Elmore, B. A., Florida State University,
Engineering, *Delavan.*

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Undergraduates.

Adams, Walter Kelsey,	*Madison.*
Bartholome, Charles Louis,	*Evansville, Ind.*
Bauer, Adam,	*Marion, Ohio.*
Bauer, Oscar Hugo,	*Oshkosh.*
Boone, Charles,	*Warren, Ill.*
Burch, Walter Jay,	*Madison.*
Byers, Vernon Clyde,	*Madison.*
Carter, Charles Edward,	*Milwaukee.*
Christensen, Charles August,	*Milwaukee.*
Cleveland, Frank Smith,	*Fond du Lac.*
Cleveland, Harry Ward,	*Foud du Lac.*
Delgado, Alan Edgar,	*Kingston, Jamaica.*
Delgado, Altamont,	*Kingston, Jamaica.*
Durrell, Percy Brooks,	*Columbus, Ohio.*
Fairchild, Fred Guy,	*Plankinton, S. D.*
Fetts, Clarence Dudley,	*Nangatuck, Conn.*
Frederickson, Frank,	*Madison.*
Froenning, Charles Herman,	*Wausau.*
Frost, Donald Karn,	*Madison.*
Fulton, Barry,	*Kansas City, Mo.*
Gilman, Stephen,	*Madison.*
Green, John Charles,	*Pittsburg, Pa.*
Haertel, Carl Frederick.	*Madison.*
Harnischfeger, Joseph Henry,	*Milwaukee.*
Hart, Julian George,	*Gillingham.*
Hauser, Warren Clifford,	*Elgin, Ill.*
Hauser, Woodling Maurice,	*Elgin, Ill.*
High, John Bertolett,	*Dayton, Ohio.*
Hillemeyer, Joseph Edward,	*Shullsburg.*
Heideman, Walter Richard,	*Waterloo.*
Hoesterwane, Hugo Fred,	*Milwaukee.*
Holmes, Elijah Homer,	*Prairie View, Texas.*
Jones, Arthur William,	*Milwaukee.*
Jorstad, Osmund Marcellus,	*Madison.*
Lowen, Archer Hamilton,	*Madison.*
McCreary, Arthur Garfield,	*Richland Center.*
McWethy, Frank Henry,	*Aurora, Ill.*
Myers, Andrew Ross,	*Armstrong Mills, Ohio.*
Oeflin, John Fred,	*North Milwaukee.*
*Randall, Emmons Blain,	*West Bay City, Mich.*

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Reid, Clarence William,	*River Falls.*
Schindler, Edward,	*Manitowoc.*
Slattery, John Francis,	*Ely, Minn.*
Smith, Andy John,	*Brandon.*
Soutter, George Alexander,	*Elgin, Ill.*
Stewart, Judson Lloyd,	*Galion, Ohio.*
Thiele, Otto Victor,	*Milwaukee.*
Uihlein, Oscar Louis,	*Milwaukee.*
Verner, Peter Oleson,	*Madison.*
Wagle, Oswal Olson,	*Madison.*
Ward, Louis Edward,	*Ft. Atkinson.*
Watkins, Charles Albert,	*Chicago, Ill.*
Weed, James Murray,	*Madison.*
Whitcomb, Orlow Lee,	*Toledo, Ohio.*
Wigman, James Bernard,	*Green Bay.*
Wilcox, Guy Maurice,	*Madison.*
Wilson, George Charles,	*Milwaukee.*
Winkler, William Kneeland,	*Milwaukee.*
Ziedlhack, Arnold Alexander,	*Milwaukee.*
Zitka, John,	*Racine.*

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SUMMER DAIRY SCHOOL 1903.

Adams, Erwin Lynn,	*Hancock.*
Ballantyne, Frederick,	*Madison.*
Barber, Albert H.,	*Chicago, Ill.*
Foreman, Ernest Mason,	*Stanley.*
Ketner, Joseph,	*Elmhurst.*
Mitchell, William Walter,	*Pardeeville.*
Nelson, Ralph Mervyn,	*Baldwin.*
Stickney, Otis Lyle,	*Pardeeville.*
Stobbe, John Lewis,	*Berlin.*
Swanson, Edwin Albert,	*Little Falls.*
Turner, Henry Alvin,	*Rome.*
Urner, Charles Anderson,	*Madison.*

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SCHOOL OF MUSIC.

Graduates.

Brand, Bessie Goodrich,	*Madison.*
Hansen, Daisy Etta,	*Madison.*
Ranson, Lyla Albina,	*Madison.*

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Collegiate.

THIRD YEAR.

Blum, Emma Marie,	*Madison.*
Brodrick, Gertrude Adelaide,	*Madison.*
Burmeister, Nellie Mildred,	*Madison.*
Kasberg, Petra Elvina,	*Madison.*
King, Bessie Susan,	*Neillsville.*
Lang, Stella Mabel,	*Lodi.*
Linne, Edna Hildegard,	*Red Wing, Minn.*
McLean, Marguerite Louise,	*Menomonie.*
Purcell, Eleanor Cecilia,	*Madison.*
Rider, Melinda Catherine,	*Madison.*
Sanderson, Grace Cynthia,	*Lodi.*
Stephens, Maude Luenette,	*Fennimore.*
Toepfer, Mathilde Louise,	*Madison.*
Wagner, Meta,	*Madison.*

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SECOND YEAR.

Allyn, Horace William,	*Madison.*
Ballantyne, Edith Virtue,	*Bloomington.*
Ballard, Clara Emily,	*Madison.*
Brattrud, Cordelia Eudora,	*Madison.*
Buehler, Elizabeth,	*Monroe.*
Bundy, Bessie Birdell,	*Prairie du Sac.*
Byrne, Agnes,	*Madison.*
Carey, Katherine Lee,	*Bloomington.*
Dow, Illa Belle,	*Madison.*
Epstein, Charlotte,	*Portage.*
Glen, Alice Mary,	*Madison.*
Graves, Edna Lora,	*Brooklyn.*
Hatleberg, Anna Helen,	*De Forest.*
Hayhurst, Elizabeth,	*Waterloo.*
King, Elsie,	*Neillsville.*
Klussman, Josephine,	*Madison.*
Lavin, Bessie,	*Madison.*
Lounsbury, Almyra Belle,	*Madison.*
Main, John S.,	*Madison.*
McKay, Alice Vienna,	*Madison.*
Olsen, Maybelle Harriet,	*Cambridge.*
Starks, Estelle Marie,	*Madison.*

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Woock, Grace Genevieve,	*Baraboo.*
Winterbotham, Rose Emma,	*Madison.*

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FIRST YEAR.

Baas, Alexius Henry,	*Madison.*
Ballard, Catherine Marie,	*Mendota.*
Binz, Elsie,	*Chicago, Ill.*
Breitenbach, Mrs. Bertha,	*Madison.*
Breitenbach, Mabel Rose,	*Madison.*
Buchanan, Iva Luella,	*Rio.*
Carey, Loretta,	*Sioux City, Iowa.*
Chatterton, Alta Eudora,	*Madison.*
Colburn, Willis Paul,	*Madison.*
Dahle, Ella,	*Deerfield.*
Dodge, Mary Louise,	*Windsor.*
Dye, Daisy Rumina,	*Madison.*
Egre, Ella Johanna,	*Deerfield.*
Elmer, Fannie Rebecca,	*Schultz.*
Etter, Inez Martha,	*Monroe.*
Evans, Mary Margaret,	*Spring Green.*
Fairchild, Laura,	*Madison.*
Ferguson, Donald Nivison,	*Milwaukee.*
Fisher, Bertha Miriam,	*Madison.*
Forward, Abigail Lois,	*Berlin.*
Fraser, Jessie Wyness,	*New Glasgow, N. S.*
Freeman, Mary,	*Madison.*
Fritz, Flossie Irene,	*Winslow, Ill.*
Fryette, Leora Blanche,	*Madison.*
Gaffin, Charles H.,	*Madison.*
Gardner, Lydia Stella,	*Linden.*
Gilman, Flora Moseley,	*Madison.*
Goodnight, Mrs. Gertrude,	*Madison.*
Gorder, Blanche Pauline,	*Dodgeville.*
Grow, Grace Lilian,	*Neillsville.*
Haertel, Lillian,	*Madison.*
Hande, John Hallward,	*Eau Claire.*
Heinrichs, Ida Amanda,	*Blairstown, Iowa.*
Hoefer, Chester Arthur,	*Freeport, Ill.*
Hoffman, Lothar,	*Fort Wayne, Ind.*
Holty, Martin Muell,	*Beloit.*
Hornberger, Alfred,	*Sauk City.*
Houghton, Grace Adams,	*West Salem.*

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Hutton, Anna Macgregor,	*Waukesha.*
Johnson, Mrs. Cherstine,	*Deerfield.*
Johnson, Margaret Isabel,	*Sheridan.*
Johnson, Margery Daw,	*Madison.*
Kuntz, Litta,	*Freeport, Ill.*
Lang, Bertha Alice,	*Lodi.*
Langenhan, Selma,	*Ableman.*
Lathrop, Mrs. Marie,	*Madison.*
Legler, Alice Louise,	*Madison.*
Leslie, Donald Eugene,	*Clinton, Ia.*
Lien, Hannah,	*Granite Falls, Minn.*
Lounsbury, Benjamin Franklin,	*Madison.*
Marquardt, Theodore,	*Lombard, Ill.*
Mashek, Anna Magdalene,	*La Crosse.*
Maurer, Erna Edna,	*Arcadia.*
McClernan, Thomas Joseph,	*Madison.*
McLean, Marion Clara,	*Monroe.*
McGrew, Julia,	*Morgantown, W. V.*
McKay, Sara Roxey,	*Madison.*
Milbrath, Edwin Charles,	*Milwaukee.*
Millar, William John,	*Milwaukee.*
Mueller, Erma Voshardt,	*Two Rivers.*
Norton, Sara Evelyn,	*Poynette.*
O'Neill, Marion,	*Neillsville.*
Ottum, Anette Helena,	*McFarland.*
Pallansch, Arthur John,	*Madison.*
Peck, Myrtle Elizabeth,	*Bangor.*
Pettigrew, Bessie,	*Sioux Falls, S. D.*
Pettigrew, Paul Frederick,	*Sioux Falls, S. D.*
Pray, Kenneth Louis Moffat,	*Stevens Point.*
Ray, George Rankin,	*Waukesha.*
Roach, Clara,	*Waterloo.*
Ross, Maybelle,	*Belleville.*
Rossman, Birdie Alice,	*Neillsville.*
Seville, Flavia Alga,	*Lodi.*
Sheets, Gaile Winifred,	*Greenwood.*
Slattery, Ida May,	*Eagle River.*
Smith, Eleanor Clemons,	*Madison.*
Smith, Lloyd Raymond,	*Milwaukee.*
Taylor, Bertha Mae,	*Madison.*
Taylor, Jennie Maybelle,	*Madison.*
Teisberg, Julia Serevina,	*Stoughton.*

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Theobald, Almina Mae,	*Madison.*
Thorp, Juliet,	*Madison.*
Vail, Stella Be Quette,	*Madison.*
Waller, Frank Laird,	*Menomonie.*
Watson, Leah Lillian,	*Blairstown, Iowa.*
Weld, Harold Kenneth,	*Elgin, Ill.*
Wellman, Lula Delle,	*Madison.*
Wilson, Nina Edna,	*Madison.*
Woerpel, Meta Lydia,	*Madison.*
Xavier, Sister Mary,	*Watertown.*

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SUMMARY OF STUDENTS.

GRADUATE SCHOOL—115.

Fellows and Scholars	30
Graduate Students	85

COLLEGE OF LETTERS AND SCIENCE—1,312.

Graduate Students	105
Senior Class	217
Junior Class	231
Sophomore Class	263
Freshman Class	395
Special Students	29
Adult Special Students	44
Two Year Pharmacy Students	28

Included in the above are the following:

Course in Commerce—177.

Senior Class	21
Junior Class	25
Sophomore Class	49
Freshman Class	74
Adult Special Students	8

Course in Philosophy—65.

Senior Class	23
Junior Class	42

Course in Pharmacy—36.

Graduates		3
Four Years' Course	Seniors	3
	Juniors	4
Two Years' Course	Second Year	11
	First Year	17

COLLEGE OF MECHANICS AND ENGINEERING—744.

Fellows and Graduates	7

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Senior Class—94.

Civil Engineering Course	30
Mechanical Engineering Course	19
Electrical Engineering Course	38
General Engineering Course	7

Junior Class—134.

Civil Engineering Course	43
Mechanical Engineering Course	24
Electrical Engineering Course	54
General Engineering Course	13

Sophomore Class—170.

Civil Engineering Course	56
Mechanical Engineering Course	44
Electrical Engineering Course	64
General Engineering Course	6

Freshman Class	299
Special Students	40

COLLEGE OF AGRICULTURE—525.

Graduates			3
Long Course	Seniors	8	
	Juniors	10	
	Sophomores	10	
	Freshmen	21	
	Specials	8	57
Short Course	Second Year	123	
	First Year	187	310
Dairy Course			155

COLLEGE OF LAW—201.

Senior Class	50
Middle Class	62
Junior Class	61
Special Students	5
Adult Specials	2
Students Electing Law Studies	21

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SCHOOL OF MUSIC—172.

Collegiate.	Graduates	3
	Third Year	14
	Second Year	24
	First Year	131

SUMMER SESSION OF 1903.

Letters and Science—		
Graduates	84	
Undergraduates and teachers	234	
Apprentices and Artisans—		
Graduates	10	
Undergraduates and teachers	60	
Dairy School	12	—400
Deduct students now attending the University	127	— 273
Total number of students		3227
Twice enumerated 76, leaving as actual number		3151

In the enumeration of special students above, the classification by courses is as follows: Letters and Science, third year, 19; second year 11; Civil Engineering, fourth year 4, third year 2, second year 13; Mechanical Engineering, third year 1, second year 5; Electrical Engineering, fourth year 4, third year 8, second year 3.

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APPENDIX.

BULLETIN OF THE UNIVERSITY OF WISCONSIN.

The Bulletin of the University of Wisconsin is published bi-monthly at Madison. For postal purposes, all issues in all series of the Bulletin are included in one consecutive numbering as published, a numbering which has no relation whatsoever to the arrangement in series and volumes.

Under the heading General series are included the annual University catalogue, announcements of the various colleges and courses of the University, etc. The numbers in the General series are of varying size and are not designed to form volumes with title-pages and indexes. To date, the following serial numbers of the Bulletin are issues in the General series, viz., Nos. 24, 27, 29, 34, 35, 37, 44, 45, 46, 48, 52, 53, 56, 57, 58, 59, 60, 61, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 80, 81, 82, 84, 85, 86, 88.

The Economics and Political Science series, the History series, the Philology and Literature series, the Science series, and the Engineering series contain original papers by persons connected with the University. The series formerly issued as the Economics, Political Science, and History series was discontinued with the completion of the second volume, and has been replaced by the Economics and Political Science series and the History series.

The Board of Editors of the five above-named series consists of:

WILLIAM H. HOBBS, Ph. D. (Chairman), *Editor of the Science Series.*

RICHARD T. ELY, Ph. D., LL. D., *Editor of the Economics and Political Science Series.*

FREDERICK J. TURNER, Ph. D., *Editor of the History Series.*

EDWARD T. OWEN, Ph. D., *Editor of the Philology and Literature Series.*

FREDERICK E. TURNEAURE, C. E., *Editor of the Engineering Series.*

WALTER M. SMITH, A. B., *Secretary.*

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The numbers issued to date in these series are as follows:

A. Economics, Political Science, and History Series.

VOLUME I.

(Complete in three numbers, with title-page, table of contents, and index.)

No. 1. The geographical distribution of the vote of the thirteen states on the Federal Constitution, 1787-8, by Orin Grant Libby. 1894. 8 + 116 p. 2 pl. 75 cents. *Out of print.*

No. 2. The finances of the United States, from 1775 to 1789, with especial reference to the budget, by Charles Jesse Bullock. 1895. 8 + 157 p. 75 cents.

No. 3. The Province of Quebec and the early American revolution. A study in English-American colonial history, by Victor Coffin. 1896. 17 + 288 p. 75 cents.

VOLUME II.

(Complete in four numbers, with title-page, table of contents, and index.)

No. 1. New governments west of the Alleghanies before 1780, by George Henry Alden. 1897. 7 + 74 p. 50 cents.

No. 2. Municipal history and present organization of the city of Chicago, by Samuel Edwin Sparling. 1898. 188 p. 75 cents.

No. 3. Congressional grants of land in aid of railways, by John Bell Sanborn. 1899. 130 p. 50 cents.

No. 4. English common law in the early American colonies, by Paul Samuel Reinsch. 1899. 64 p. 50 cents.

B. Economics and Political Science Series.

VOLUME I.

No. 1. The decline of land-owning farmers in England, by Henry Charles Taylor. *In preparation.*

C. History Series.

VOLUME I.

No. 1. The origin of the system of land grants for education, by Joseph Schafer. 1902. 53 p. 35 cents.

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D. Philology and Literature Series.

VOLUME I.

(Complete in four numbers, with title-page, table of contents, and index.)

No. 1. On the development of American literature from 1815 to 1833, by William B. Cairns. 1898. 4 + 87 p. 35 cents.

No. 2. The treatment of nature in the poetry of the Roman Republic, by Katharine Allen. 1899. 131 p. 50 cents.

No. 3. The Great Mother of the gods, by Grant Showerman. 1901. 113 p. 4 pl. 45 cents.

No. 4. Wortlehre des Adjectivs im Altsächsischen, by Edwin Carl Roedder. 1901. 81 p. 35 cents.

VOLUME II.

(Complete in three numbers, with title-page, table of contents, and index.)

No. 1. The time elements of the Orestean trilogy, by Jonathan Bailey Browder. 1902. 76 p. 35 cents. *Out of print.*

No. 2. Schillers Einfluss auf Grillparzer, eine litterarhistorische Studie, by Otto Howard Lessing. 1902. 128 p. 50 cents.

No. 3. The philosophy of Ernest Renan, by Herman Gustav Adolph Brauer. 1903. 175 p. 50 cents.

E. Science Series.

VOLUME I.

(Complete in five numbers, with title-page, table of contents, and index.)

No. 1. On the speed of the liberation of iodine in mixed solutions of potassium chlorate, potassium iodide, and hydrochloric acid, by Herman Schlundt. 1894. 33 p. 35 cents.

No. 2. On the quartz keratophyre and associated rocks of the north range of the Baraboo Bluffs, by Samuel Weidman. 1895. 22 p. 3 pl. 25 cents.

No. 3. Studies in spherical and practical astronomy, by George Cary Comstock. 1895. 51 p. 40 cents.

No. 4. A contribution to the mineralogy of Wisconsin, by William Herbert Hobbs. 1895. 48 p. 5 pl. 40 cents.

No. 5. Analytic keys to the genera and species of North American mosses, by Charles Reid Barnes and Frederick DeForest Heald. 1896. 10 + 212 p. $1.00.

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VOLUME II.

(Complete in six numbers, with title-page, table of contents, and index.)

No. 1. The action of solutions on the sense of taste, by Louis Kahlenberg. 1898. 31 p. 35 cents.

No. 2. Aspects of mental economy, by M. Vincent O'Shea. 1900. 166 p. 2 pl. 75 cents.

No. 3. Contributions from the Anatomical Laboratory of the University of Wisconsin, by William Snow Miller. 1900. 48 p. 13 pl. 40 cents.

No. 4. The anomalous dispersion of cyanin, by Carl Edward Magnusson. 1900. 50 p. 7 pl. 30 cents.

No. 5. The theory of electrolytic dissociation, as viewed in the light of facts recently ascertained, by Louis Kahlenberg, with the coöperation of Arthur Alexander Koch and Roy Dykes Hall. 1901. 55 p. 40 cents.

No. 6. On the dielectric constants of pure solvents, by Herman Schlundt. 1901. 37 p. 25 cents.

VOLUME III.

No. 1. On the sensitiveness of the coherer, by Edson Ray Wolcott. 1901. 20 p. 20 cents.

In preparation: The sesquiterpenes, by Oswald Schreiner.

F. Engineering Series.

VOLUME I.

(Complete in ten numbers, with title-page, table of contents and index.)

No. 1. Track, by Leonor Fresnel Loree. 1894. 24 p. 25 cents. *Out of print.*

No. 2. Some practical hints in dynamo design, by Gilbert Wilkes. 1894. 16 p. 25 cents. *Out of print.*

No. 3. The steel construction of buildings, by Corydon Tyler Purdy. 1894. 27 p. 25 cents. *Out of print.*

No. 4. The evolution of a switchboard, by Arthur Vaughan Abbott. 1894. 32 p. 4 pl. 35 cents. *Out of print.*

No. 5. An experimental study of field methods which will insure to stadia measurements greatly increased accuracy, by Leonard Sewell Smith. 1895. 45 p. 1 pl. 35 cents. *Out of print.*

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No. 6. Railway signaling, by William McCollough Grafton. 1895. 38 p. 35 cents.

No. 7. Emergencies in railroad work, by Leonor Fresnel Loree. 1895. 42 p. 35 cents.

No. 8. Electrical engineering in modern central stations, by Louis Aloysius Ferguson. 1896. 33 p. 35 cents.

No. 9. The problem of economical heat, light, and power supply for building blocks, school houses, dwellings, etc., by Gerdt Adolph Gerdtzen. 1896. 69 p. 45 cents.

No. 10. Topographical surveys, their methods and value, by John Lane Van Ornum. 1896. 39 p. 35 cents.

VOLUME II.

(Complete in ten numbers, with title-page, table of contents and index.)

No. 1. A complete test of modern American transformers of moderate capacities, by Arthur Hillyer Ford. 1896. 88 p. 35 cents.

No. 2. A comparative test of steam injectors, by George Henry Trautmann. 1897. 34 p. 25 cents.

No. 3. The superintendent of bridges and buildings, by Onward Bates. 1898. 30 p. 25 cents.

No. 4. Some unrecognized functions of our state universities, by John Butler Johnson. 1899. 20 p. 25 cents. *Out of print.*

No. 5. The transcontinental triangulation along the thirty-ninth parallel, by John Fillmore Hayford. 1900. 22 p. 6 pl. 25 cents.

No. 6. The chemical engineer, by Magnus Swenson. 1900. 13 p. 25 cents.

No. 7. Recently improved methods of sewage disposal, by John Butler Johnson. 1900. 19 p. 25 cents.

No. 8. An experimental study of the corrosion of iron under different conditions, by Carl Hambuechen. 1900. 47 p. 19 pl. 30 cents.

No. 9. The progress of the ceramic industry, by Edward Orton, Jr. 1903. 23 p. 25 cents.

No. 10. The effect of frequency on the steadiness of light emitted from an incandescent lamp, by Harold Seaman. 1904. 47 p. 25 cents.

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Persons who reside in the state of Wisconsin may obtain copies of the Bulletin free by applying to the Secretary of the Regents and paying the cost of transportation. Certain numbers, as indicated in the preceding list, are out of print and can no longer be furnished. Bulletins issued since May 1, 1898, are entered as second-class mail matter and no charge is required by the University to cover cost of postage. The postage required for such of the earlier numbers as can now be furnished is as follows: Econ. ser., Vol. 1, No. 2, 8c; No. 3, 13c; Vol. 2, No. 1, 4c; Phil. ser., Vol. 1, No. 1, 5c; Sci. ser., Vol. 1, No. 1, 2c; No. 2, 2c; No. 3, 3c; No. 4, 3c; No. 5, 10c; Vol. 2, No. 1, 2c; Eng. ser., Vol. 1, No. 6, 2c; No. 7, 3c; No. 8, 2c; No. 9, 4c; No. 10, 3c; Vol. 2, No. 1, 4c; No. 2, 2c.

Any number of the Bulletin now in print will be sent postpaid to non-residents from the office of the Secretary of the Regents on receipt of the price given in the list printed above. Title-pages, tables of contents, and indexes to completed volumes will be furnished without cost on application to the University Librarian. Communications having reference to an exchange of publications should be addressed to the Librarian of the University of Wisconsin, Madison, Wis.

PUBLICATIONS OF THE WASHBURN OBSERVATORY.

From the Washburn Observatory have been issued the publications of the Washburn Observatory, Vols. 1-11 (1882-1902). Correspondence regarding these publications should be addressed to the Director of the Washburn Observatory, Madison, Wis.

PUBLICATIONS OF THE AGRICULTURAL EXPERIMENT STATION.

The Agricultural Experiment Station has issued Annual Reports, Nos. 1-20 (1883-1903), and Bulletins, Nos. 1-113 (1883-1904.) Many of these publications are now out of print, but such annual reports and bulletins as are now available are sent free to all residents of the state upon request. A list of issues to date of the bulletins may be obtained from the Director of the Agricultural Experiment Station, Madison, Wisconsin, to whom all correspondence regarding these publications should be addressed.

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BULLETIN OF THE WISCONSIN FARMERS' INSTITUTES.

From the office of Farmers' Institutes has been issued the Wisconsin Farmers' Institutes Bulletin, Nos. 1-17 (1887-1903). Correspondence regarding this publication should be addressed to the Superintendent of Agricultural Institutes, Madison, Wisconsin.

PH. D. THESES OF THE UNIVERSITY OF WISCONSIN.

(List of theses printed since the publication of the Catalogue for 1902-1903.)

Brauer, Herman Gustav Adolph, Ph. D., 1902.

The philosophy of Ernest Renan. Reprinted from the Bulletin of the University of Wisconsin, Philology and Literature series, Vol. 2, pp. 205-380, Madison, 1903.

Fernekes, Gustave, Ph. D., 1903.

Action of sodium and potassium amalgams on various aqueous solutions. Reprinted from the Journal of Physical Chemistry, Vol. 7, pp. 611-639, Ithaca, 1903.

Kinsman, Delos Oscar, Ph. D., 1900.

The income tax in the commonwealths of the United States. Reprinted from the publications of the American Economic Association, third series, Vol. 4, No. 4, Ithaca, 1903.

McCarthy, Charles, Ph. D., 1901.

The antimasonic party: a study of political antimasonry in the United States, 1827-1840. Reprinted from the Annual Report of the American Historical Association for the year 1902, Vol. 1, pp. 365-574, Washington, 1903.

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